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UK 'attractive market' for American manufacturers

US government forecast of sales trends abroad

MARKET research firms constantly peddle their predictions about the markets for computers in various countries. The US government, however, relies on its own information gathering apparatus to assess and forecast the manufacturing and sales trends abroad. Documents obtained from the US Department of Commerce indicate what US computer manufacturers can expect in the near future in sales and what the general economic conditions will be in four major markets: Turkey, Italy, Japan and the UK.

The Commerce Department reports, issued in July, are based on 1976 data supplied by US embassies or US consuls in the countries studied. Here is how the US government sees the situation:

TURKEY. The first modern computer entered Turkey in 1961, but the country still has no established information processing policy. The electronic industry is in the main limited to assembly operations, although efforts are being made to establish a full range of manufacturing facilities. US companies enjoy almost a complete monopoly in the computer equipment market, supplying about 90 per cent of the country's present needs. Although the main competitors today are European companies,

there is a tendency for their share of the market to be eroded by the Japanese.

In early 1976 there were about 150 accounting machines in use in Turkey, and the prediction is made that their number will rise to 428 by 1982.

Estimates call for 44 general purpose computers to be installed by 1982; compared with 136 in 1976.

The trend among Turkish users is to purchase a complete system, with software and peripherals included in the package price.

Computer imports, which are currently running at about \$5 million a year, are affected, for the most part, under a system of annual quotas promulgated by the Minister of Commerce. Because of Turkey's financial and technological limitations, slow growth of this market to about \$8 million a year can be expected.

ITALY. Despite lingering economic problems, 1976 was a year of recovery for the Italian economy, especially for the country's business machine and data processing industries. Composed of a relatively few companies such as Olivetti, and US firms like IBM and Honeywell, the industry produced nearly 30 per cent more revenue in 1976 than in 1975. Small and medium sized businesses became increasingly important

in the current pattern of purchase favours small and very small computerised business systems and peripheral equipment designed to decentralise data processing. US minicomputer makers, such as Hewlett-Packard, Digital Equipment and Data General, expect the 1978 boom in sales to continue through 1977. ASSINFORM, the Italian industry's trade association, predicts the positive trend will permeate 1978.

Unit sales of desk-top printing calculators and small business machines are expected to increase 30 per cent in 1977 over 1976. Olivetti believes that sales of scientific minicomputers, however, will be slow because of the limited scale of scientific research in Italy.

JAPAN. At the end of September, 1976, there was a total of 37,881 general purpose computer systems in Japan, valued at \$7.9 billion. Of that number, 24,331 were of domestic manufacture and were valued at \$4.5 billion and 13,550 were of foreign origin and valued at \$3.4 billion. The market share of domestic systems in use represented, therefore, 57 per cent of Japan's installed base.

The largest computer user by industry category is trading, including both wholesale and retail trade. Trade leads other industries by a wide margin, and is followed by finance, chemical and petroleum, electrical machinery and transportation. The Commerce Department report makes no attempt to break down the foreign systems by country of origin, but it is generally believed that US computers, dominated by IBM, NCR and Univac, lead in sales. No forecasts of the Japanese computer market were made by the Commerce Department.

BRITAIN. The computer equipment market in the UK continues to grow despite economic fluctuations. The UK is one of the largest markets for computers in Europe, and the existence of only one major indigenous manufacturer, ICL, makes it an attractive market for US manufacturers.

Business data processing is by far the largest sector of the market. The traditional market shares are estimated to be in the region of 30 to 35 per cent each for IBM and ICL, with NCR, Burroughs and Honeywell tied for third place.

The struggle for the top position has been evidenced for at least 10 years despite UK government policies designed to improve the situation of ICL. Within official circles, there is a strong "Buy British" sentiment.

Objections to preferential treatment afforded ICL have been voiced by US manufacturers, but the suppliers of peripherals and components, unlike those in the computer business, have been wisely discreet.

Although an accurate breakdown of the benefits to US suppliers of ICL's operations could not be obtained, industry sources believe that approximately 40 per cent by value of the components in ICL's computers are of US origin or are supplied by US firms with facilities in the UK.

Smaller British firms appear to be either short of new technology or short of cash, and in both cases they look favourably on agreements with US firms.

With the exception of a few smaller firms, new applications

of data processing equipment, a trend that is expected to continue.

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Computing centre for chemists

A NATIONAL computing centre for chemists of academic, industrial and government research laboratories is being set up in the US.

The National Resource for Computation in Chemistry will be based at the Energy Research and Development Administration's Lawrence Berkley Laboratory in California and funded jointly by the administration and by the National Science Foundation.

Control Data 7800 and two ES/3000 series computers. It will provide computing resources for research in topics like crystallography, quantum chemistry, kinetics, non-numerical methods and so on.

Earl Hyde, deputy director of the Lawrence Berkley Laboratory, said the centre "should develop into a unique facility for all old chemical chemists to use over the US to make calculations which require the power and capacity of a modern computer centre. It should not possible state-of-the-art computations which were not possible before."

The aim of the centre is to provide powerful hardware and specialised software to solve research problems in chemistry.

The centre will have access to the Lawrence Berkley Laboratory's

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The accelerating merger of computer, communications and semiconductor technologies heralds the arrival of the "Information Age", writes MORRIS EDWARDS (pictured left). But he says that, while their destinations

may be the same, the routes by which Britain and the US will travel to this new era look like being markedly distinct. Edwards is a Boston-based data communications consultant, and has more than 16 years' experience

In telecommunications both in the US and in his native England. Recently he was editor of the *Datacomm User Magazine*, and programme chairman of the annual *Datocom* conference and exposition.

Heralding the Information Age

IN the United States, as in Britain, the accelerating merger of computer, communications and semiconductor technologies is heralding the arrival of the "Information Age." However, while their destinations may be the same, the routes by which Britain and the United States will travel promise to be markedly distinct, reflecting the substantial differences in the governmental, regulatory and industrial makeup of the two countries.

Government in the United States is separated into three departments, one vested with legislative power, one with executive power and the third with judicial power. At the federal level, these departments translate into Congress, the Executive Office of the President and the Supreme Court, each of which could play a role in developing a national information policy.

When he took office in January, President Carter inherited a report which strongly recommended the formulation of a co-ordinated national information policy. Prepared by the Domestic Council Committee on the Right of Privacy under then

Vice-President Nelson Rockefeller, the report stated that a great number of public policy questions were being generated by advances in computer and communications technology and by citizen demands for "clarification and their rights to have end control information."

Specifically, the report proposed an inter-agency council on information policy with a full-time chairman and high-level representatives from federal agencies. In addition, it recommended an advisory committee with members drawn from the private sector, local government and the academic and professional disciplines concerned with information policy issues.

An office of information policy, established in the Executive branch to advise the President, would prevent information concerns from being compromised, the report stated. In spite of the report's recommendations, President Carter has proposed disbanding the one agency dealing with information policy in the White House, the Office of Telecommunications Policy (OTP), splitting its functions between the Office of Management and

Congress, concern over the OTP reorganisation comes mainly from the Senate and House Subcommittees on Communications. Both groups have been holding hearings to decide whether it is time to update the

Budget (OMB) and the Department of Commerce.

If Congress takes no action on the proposal by mid-September, the split goes into effect automatically, putting policy matters in the hands of an Assistant Secretary of Commerce for Communications and Information.

Many have expressed con-

Critics of the plan have been assured that President Carter attaches significant importance to communication issues.

cern over the demise of OTP, and Congress is examining what, if any, action should be taken to maintain a strong and visible policy-setting force. Meanwhile, Commerce Secretary Juanita Kreps has reassured critics of the plan that she and President Carter both attach significant importance to communication issues.

In Congress, concern over the OTP reorganisation comes mainly from the Senate and House Subcommittees on Communications. Both groups have been holding hearings to decide whether it is time to update the

Communications Act of 1934 to bring it in line with such technological developments as satellites, hybrid date processing/communications services and microprocessors.

Since a major re-write of the Act would raise critical issues affecting information policy, the subcommittees are naturally apprehensive of any downgrading in the status of OTP.

To provide a technological background to its deliberations, Congress has asked its advisory arm, the Technology Assessment Board to study interacting communications, computer and information policies.

Working under a \$75,000 budget, the board will examine new technologies such as satellites, fibre optics, solid-state devices and advanced switching-multiplexing and digital techniques. It will also look at new services for transportation, electronic mail, electronic funds transfer, financial and business services, health-care delivery, education and aids to the handicapped.

Another Congressional resource is the FCC, which serves not only as the nation's communications watchdog, but also as a repository of expertise in computer/communications issues. Over the past decade, the FCC has continued to break new ground in areas of communications policy and has simultaneously become the most visible federal agency with delegated authority in any area of information resources policy.

It was the FCC's recent policy of favouring competition in communications that ultimately resulted in Congress reviewing the Communications Act of 1934. The FCC's pro-competition policy dates from 1968, when its landmark Carterfone decision ruled that independent (non-AT&T) equipment could be attached to the switched public telephone network. Previously, AT&T had enjoyed a complete monopoly over the supply of such equipment.

For data users, the major benefit of the Carterfone decision was the freedom it gave them to use higher-speed or cheaper versions of the modems offered by AT&T. Over the next few years AT&T's competitive front broadened considerably when the FCC ruled that any "specialised" carrier could offer interstate private-line services simply by demonstrating that it had the required technological and financial muscle.

AT&T claimed that such carriers would "skim the cream" off the lucrative long-haul private-line services, leaving AT&T with the less profitable short-haul business.

AT&T argued that, since its profits from long-haul services subsidised the switched network, loss of that business to the new carriers would force up the telephone bills of homeowners across the country.

Failing to convince the FCC with this argument, AT&T finally took its case "to the public" last year by having bills introduced in Congress effectively to reverse the FCC pro-competition rulings and reinstate a total communications monopoly.

Known collectively as the Consumer Communications

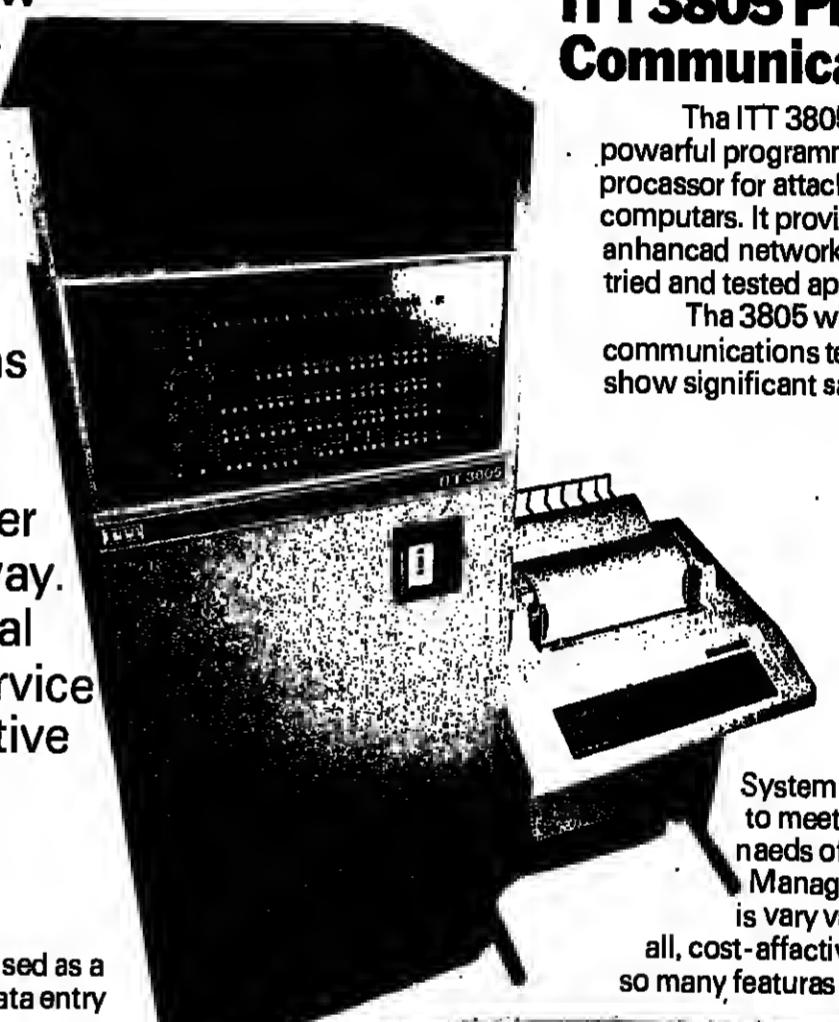
These are the three latest additions to an already extensive range of data communications products from ITT Business Systems

And because ITT is one of the world's largest and most successful companies, you can be sure that when we say we mean business, we mean what we say.

ITT 3805 Programmable Communications Controller

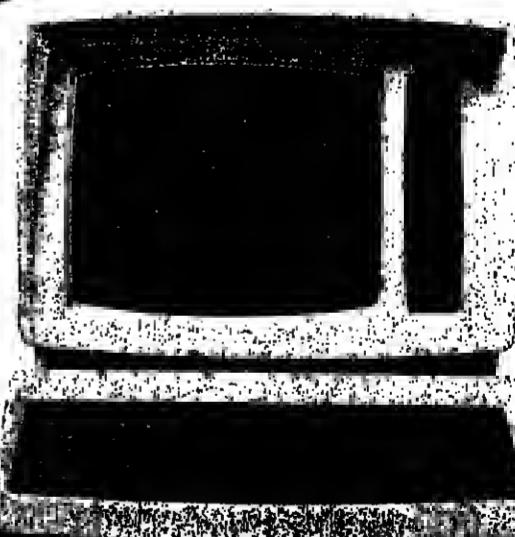
The ITT 3805 is a comprehensive and powerful programmable communications front-end processor for attachment to IBM mainframe computers. It provides flexible network control and enhanced networking without the need to change tried and tested applications or mainframe software.

The 3805 will also allow greater choice of communications techniques in the future and can show significant savings in network costs.



ITT 3230 Visual Display System

The ITT 3230 Visual Display System has been specifically designed to meet all the data communications needs of the Systems Designer, the DP Manager and, of course, the operator. It is very versatile, good looking and above all, cost-effective. No equivalent system offers so many features at a comparable price.



The ITT 3230 with its diskette attachment is particularly suited to file enquiry and update although many will see it in a data entry role.

Three more reasons why ITT Business Systems means business.

These are the three latest additions to an already extensive range of data communications products from ITT Business Systems

Individually, they offer you a new and extended capability based on the latest computer technology. Each of them can help to make your life easier and your business more efficient.

But collectively they have something more to say - they demonstrate that ITT Business Systems really does mean business.

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ITT 3630 Multifunction Intelligent Terminal System

The ITT 3630 is an intelligent terminal system. It can be used as a remote batch terminal or, simply by changing a diskette, as a data entry system, or an interactive terminal.

These functions are supported by advanced, proven software - DGEN. This allows you to generate a data entry and transmission system. It is designed to enable more efficient data input and reduced software development costs.

System control can be located just where you want it.

The ITT 3630 is a quiet, easy-to-use system designed to look good in any office.



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ITT Business Systems

MARKETVIEW

Survival plans for the Eighties

FOUR years ago, six European-owned companies still competed against IBM in the medium to large scale general purpose computer market. In order of size they were ICL, Siemens, CII, Philips, Dataasab, and Telefunken Computer.

Today, only the first two survive in that market, though they have been joined by CII-Honeywell Bull which achieved "European" status when its French shareholding was raised from 34% to 53% in July, 1976.

Which of these three will still be around — at least in the general purpose mainframe market — in 1981, four years from now?

This somewhat morose thought is prompted by a little reported talk by Pierre Lepicard, CII-HB's financial director, to a gathering of European financial journalists in Guernsey earlier this year.

After describing the economics of designing, manufacturing and marketing a range of end user systems as wide as IBM's, M Lepicard displayed again the financial model with which Honeywell Bull had previously justified its absorption of the CII DP division. Figure 1.

According to this, a general purpose systems manufacturer with \$12 billion revenues in 1975 and therefore a 55% share of world DP systems revenues (guess who?) would have been left with 30% of revenue as profit after allocating other parts of the revenue to direct production costs, R&D, marketing, maintenance and administrative overheads.

These costs do not decline proportionally with revenue, so that the smaller a manufacturer's share of the world market, the smaller too will be the profit. But this might still be a healthy 15% for a manufacturer with \$3 billion annual revenues and a 14% share of the world market in 1975.

M Lepicard claimed that with an 11% share of world markets, especially ICL and the Siemens

ship to ICL and Siemens, to help share out the burden of developing new systems for the 1980s.

Such geographical specialisation is bound to reduce marketing and maintenance overheads. If these two cost items are cut in half for company D, then the company's financial profile would be miraculously transformed from a 3.3% to a 7% profit on a \$1.5 billion turnover.

But there is no room for complacency. The logical model looks unfavourable close to ICL and Siemens' reality for the first half of the decade.

During the last two years its financial prospects of the companies have brightened considerably. ICL is expanding at last and recording increasing profits. Siemens has cut its losses sufficiently for it to file

the division as an independent profit centre in October 1976.

One assumes that it is based on CII-HB's and Honeywell's own experience. But, if so, it can only apply to manufacturers or partnerships that market all sizes of systems in all countries of the world to all types of user.

Apart from the HIS/CII-HB partnership and IBM, only one other general purpose systems manufacturer does so, Univac.

All the others specialise more or less by type of system, geographical coverage, and the types of user. The economies achieved by such specialisation are not negligible.

Burroughs, for instance, has consistently been one of the most profitable companies in the industry on a mere 4% share of world computer manufacturers' revenues, simply by narrowing its market target area to the financial market, the US Federal government and US universities. NCR sells only terminals, small and medium size systems to the financial and distribution trades, while CDC concentrates mainly on large scale machines for scientific users.

ICL and Siemens have hitherto sold their computer systems to all types of user, but are highly specialised geographically. Siemens sells only in UK, Ireland and France, and in South Africa. ICL's marketing has become world-wide since it took over Slager Business Machines, but it markets only the ex-Singer intelligent terminals and transaction processing systems in those markets where it was not represented previously.

Apart from a 2903 foothold in

New York, it markets its general purpose computer systems in the Commonwealth, and in Europe North of the Alps. 2070, 2078 and 2880, are marketed only in the UK, France, Germany, South Africa and Australia.

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Both Cross, ICL managing director, and Jean-Pierre Brûlé, boss of CII-HB, have gone on record to say that Unidat could never have succeeded because of its cumbersome method of managing the marketing by committee. To succeed, a company must have a clear line of authority running from one man at the top.

For the same reason, CII-HB bad to promise French government departments continued support for the ex-CII Iris range until it was ready to announce a fully upward compatible joint successor range for both it and the Series 60, Level 64. This will be P7G, to be announced in 1978 for delivery from 1979 onwards.

And ICL has had to concede DME on the 2980 to former 1900 and System 4 users not yet ready to convert to large 2900 series language standards and data executive at the top.

It is hard to see any of the British, French and West German governments agreeing to a sacrifice of the much subsidised independence of their national computer manufacturers.

It may well be, however, that the trouble with Unidat was that it tried to merge too much rather than too little.

However, any systems to be produced in the 1980s by surviving European manufacturers, whether singly or jointly, will have to be very different from their existing systems, to take full advantage of the low cost microprocessors and new mass memories that will then have become available.

As Brûlé told Computer Weekly last year (CWI, November 11, 1976), it is self-interested that keeps HIS and CII-HB together in marketing each other's products, rather than any constitutional powers that the product planning committee may have.

Based on the HIS-CII-HB model, ICL, CII-HB and Siemens DP division could each keep its own individual identity, corporate structure and ownership pattern, and yet co-operate in developing, manufacturing and marketing a common product range for the 1980s. But could they agree on what those components and memories should be?

Table 2 shows the current product lines of three European mainframe manufacturers compared with those of IBM and Honeywell. By a strange coincidence there is greater similarity between CII-HB's French-developed eight-bit byte-oriented Series 60, Level 64 and the equally byte-oriented large ICL 2900 series systems from the 2900 upwards, than between Level 64 and the Honeywell-developed 36-bit word Level 66, or between the large 2900 series systems and the 24-bit word 2903/2904 range.

Both the Level 64 and the large ICL 2900 systems share the same ANSI 74 definitions of Cobol and Fortran, and are only programmable at high level.

It would be premature, however, to see there the basis of a future common European product line. The Siemens 7000 series, which is also eight-bit byte oriented, uses IBM rather than ANSI language standards down to Assembler level, and all three manufacturers have their own operating systems and job control languages.

All three also have their users breathing down their necks, and insisting on the most complete compatibility with their existing systems. That is why Siemens has always been so dogmatic about maintaining the closest compatibility in source-language

systems. It is thus possible to envisage a pattern of co-operation between CII-HB, ICL and Siemens in the development of new high-level software systems that

By Fred Lamond
Partnerships in mainframes

Manufacturers	US-owned multinationals			European-owned manufacturers		
	IBM		Honeywell	CII-Honeywell Bull	ICL	Siemens
Competing models	DP	GSD				
3033	—	—	66/B5	(P7G)	Iris 60	2980
370/166	—	—	66/80		2976	7.755
370/156	—	—	66/80		2970	7.748
370/146	—	—	66/40	(P7G)	Iris 60	1904S
370/136	—	—	66/20		1903T	7.736
370/125-2	3/15D	—	66/05	64/60	7740 Iris 55 (S1)	1902T
370/115-2	3/15D	—	—	84/50	7735	7.730
370/115-0	3/16	—	—	64/40	—	—
—	3/12	—	62/80	64/30	2904	1901T
—	3/6	—	62/50	—	2903/30	—
—	34	—	62/40	61/60	2903/30	—
—	32	—	62/20	61/40	2903/20	Ten/220
—	—	—	6/43	61/40	—	Ten/220
Language standards	IBM	IBM	ANSI 74	ANSI 74	ANSI 74 or 68	IBM
Cobol	IBM 370	None	Nona	Nona	PLAN	IBM 370
Assembler	IBM-H	—	ANSI	ANSI	ANSI	ANSI IBM-H
Fortran IV	IBM	—	Level 66 modula	—	—	IBM

would not disturb either their users' existing investment. In older computer series, nor the three companies' individual organisational identities.

Such co-operation seems not only desirable but even essential.

Each manufacturer might thus have to develop no less

than a dozen different user languages, one for each national market, a formidable undertaking. Co-operation between the three European manufacturers would reduce the task to about a third of what it would otherwise be.

Table 2. European mainframe manufacturers' product lines compared with partners and competitors. Note: Model numbers in bold type are systems with an eight-bit byte, 16- or 32-bit word data structure. Model numbers in brackets are of systems that have not yet been announced.

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Model of volume effect	In billions of US dollars			
	1976 est	1975 est	1976 est	1975 est
Users' expenditures	64	31	—	—
Value of installed equipment worldwide	108	73	—	—
Revenues of systems manufacturers	31	22	—	—

A (12)	B (6)	C (3)	D (1)
26	31	36	41
6	6	6	20
16	16.5	18	30
15	16.5	18	31
8	6.5	7	11
30	23.5	16	10
100	100	100	100

Annual revenues in comparative terms. A is in billions of US dollars. B is half the size. C is a quarter the size. D is one eighth.

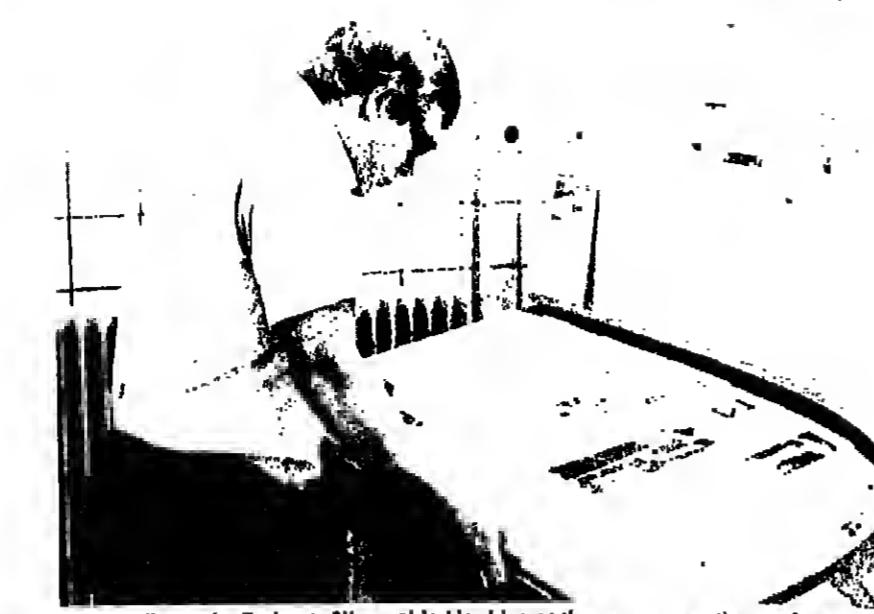
Cost improvement by doubling volume:
1.5% manufacturing, 10% operating.
Yearly minimum R&D expenditure: 100 Million US\$.

B: 3 competitors C: 5 competitors

D: 10 competitors

Source: M Lepicard's financial model, which is based on economic reasons for Honeywell-Bull's interests in CII-Honeywell Bull.

How Brabants Nieuwsblad joined the revolution...



A journalist on the Brabants Nieuwsblad looking at the newspaper, the copy for which is on the visual display terminal instead of the typewriter.

IN THE editorial offices of the Dutch daily newspaper, Brabants Nieuwsblad, you would almost be able to hear a pin drop.

The journalists are there, but their clattering typewriters have been replaced by computer terminals which gives the Dutch newspaper the most advanced editorial offices in Europe. It took more than a year of research, a lot of hard negotiating with unions, constant communications with

staff, and a foresight of the company's future financial position to bring about this change. Traditionally, it has been in the US that the technical revolutions have taken place. This time, though, it is in a quiet village in Holland — a mere 300 miles from London as the crow flies — where journalists have been learning what this revolution really means.

Brabants Nieuwsblad is one of 41 daily newspapers in Holland.

It is one of five papers — the others are weeklies — produced by the company, which also has a commercial printing firm in the group. Its circulation is 60,000, and in common with most of Holland's dailies 86% of its circulation is on subscription, being delivered to the subscribers' homes by its own newspaper boys.

The company is one of the last half a dozen remaining privately-owned publishing groups in

Holland. Three years ago, it was the first to introduce phototypesetting. "I think I knew then that we wanted to be the first to introduce an electronic newsroom," said Cor Meerbach, editorial director.

Meerbach, a journalist for the last 36 years, is still a working editor, running the 30-strong staff of the Brabants Nieuwsblad. He first became convinced that an electronic newsroom could work after he visited the

US and saw the Harris Intertype system in operation at the Quad City Times in Davenport. "I also realised that there could be a lot of prejudices aroused even before the system went in, if a good communication with the staff was not established first. So even before we went to the US we informed the editorial staff of our thinking," said Meerbach.

With Meerbach on his US trip went the assistant editor Jaap Pett. They were both impressed with the system they saw in operation and when they returned they recommended that an order should be placed.

In May, 1975, Brabants Nieuwsblad ordered a £200,000 Harris system. It comprised a Harris 2500/20 computer with 64K of memory, four discs, each with 2.4 Megabytes, six 1500 visual display terminals, one 1100 visual display terminal and one 150 lines per minute printer. The system would be connected to two Harris TX7 phototypesetting machines.

Delivery date was set for April last year, and within four months the system was installed through its acceptance trials and passed.

"Earlier in the year we took all our editorial staff to a printing exhibition where the Harris system was on display, so that they could familiarise themselves with the system being installed. Within two or three hours of the system being installed the journalists knew how to handle it. And by the evening we were producing our first edition using the terminals," explained Meerbach.

Compared with the traditional methods, the Harris system cuts out the wasteful area of retyping stories, although this is by no means the only benefit. Normally a reporter would type out his story which would then be edited and retyped for typesetting.

"After the system was installed we made tremendous savings in reporters' time working in the newspaper. We also cut the part-time element. As a result we utilised the system to its full potential for typesetting.

At Brabants Nieuwsblad, explained deputy editor Pett, the reporter types his story on the visual display terminal. It is then stored on the disc file after being given a reference number. The system calculates the length of the story and when it is ready for typesetting the story is moved into a computer file where it can be called up when the time comes for it to be typeset.

"Before any story is sent for typesetting the usual editorial discussions take place about the size, value and position of the story. If for any reason we want to see the story in hard copy, we just instruct the system to print the story out on the printer," explained Pett. "The page make-up is done as usual, and the editor gives the order for the story to be set," he added.

"The system really came into its own during the Olympics. Four years ago it could have taken us up to eight hours to make up a page. This year, the reporters could watch the television and write their stories on the terminals, which would then be swapped on the terminals and the command given to set the story to be typeset."

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ROUNDUP

EEC seeks information on computer user groups

A summary of main news items which have appeared since the last issue of Computer Weekly International on July 21.

AS a first step towards giving computer users a bigger say in the development of the industry, the EEC Commission is inviting all user groups to ensure that their names and addresses are on its files.

In a letter to Computer Weekly, the Commission says that it wishes to be better informed about the activities of the different European users' groups. User groups should send details of themselves to the Commission of the European Communities, DG III/B/2, Avenue Mr Garric, 200 rue de la Loi, B-1049 Brussels, Belgium. (CW, August 25.)

OF Epsom, UK. The £1.1 million payment which OLS is to make to the bureau's parent, the W. S. Atkins group, will be partly in the form of 32,000 OLS shares, and this will make W. S. Atkins one of the largest shareholders in OLS. (CW, August 4.)

PRESIDENT Giscard d'Estaing has set up a committee under the Inspector General du Financement to look into ways in which the French government can better assist the national computer industry. (CW, July 28.)

THE man to lead the US operations of Insac, the UK National Enterprise Board's computer services company, has been chosen. Insac does not intend to announce his name until its UK organisation has been finalised, but Cyrus Joffe, formerly with Univac in the US, is understood to be favourite for the post. (CW, August 18.)

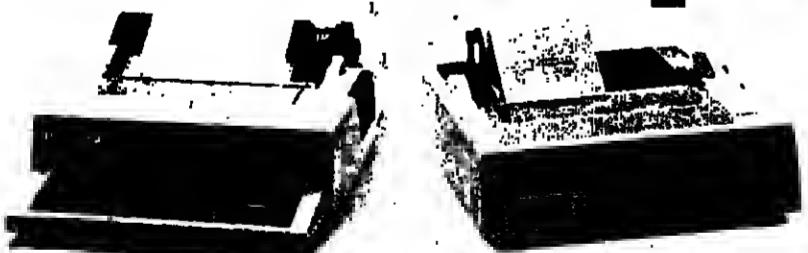
CINCOM's database management system, Total, has been adopted for worldwide marketing by NCR, on its Century and Criterion ranges. (CW, August 25.)

THREE major software products — the library of numerical subroutines, and compilers for Alog 60 and Corsi 66, from the Numerical Algorithms Group — have been announced by Prime Computer. The library was originally developed by five UK universities but last year the group became a non-profit-making company based at Oxford University. (CW, August 18.)

TEST data generation software is scheduled for release at the end of next year by UK software house Management Systems and Programming. The generator will not be a separate new product, but will be sold as a module of MSP's existing Data Manager data dictionary. (CW, August 25.)

AN enhanced transaction processing executive has been released in the US by Honeywell, which thereby follows IBM's lead in unbundling software on the fringe of its operating system. (CW, August 25.)

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SEVERAL European PTTs have followed the lead set by the UK Post Office and are offering links to US databases. The Dutch PTT is offering an access service to databases on both the Tymnet and Telenet networks, as are the French and Belgian PTTs. Switzerland, Spain and West Germany also plan to introduce it. (CW, August 11.)

THE US time sharing bureau brought the first computer room to Britain. It is not to be long before it has a presence in this country.

Information about the full range of Calculus tapes is available from the address below. Write today.

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Initially to head-up work in the administrative area, e.g. stock control, sales support, etc. Ideally candidates should have an HNC or degree (business studies or computing) plus formal training in systems or project management, but successful relevant experience will be considered equally.

The duties of the successful candidate will be numerous but essentially team leading, identifying and utilising hardware capabilities, meeting time criteria, and using organisational and innovative skills.

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Will join production control or administration teams to develop database and other programs. Candidates should have around 4 years' IBM370 background using PL/I (also ASSEMBLER desirable) and ideally DBOMP.

Appointees will be expected to lead a small team of programmers and assist analysts, have the ability to utilise hardware available and, at times, work to demanding time constraints.

London-Essex border

Systems Analysts

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Required in production control area and administration (sales). Tasks will be to develop existing and new systems to automate certain aspects in respective environments. Candidates should have user department or programming experience and, if possible, formal systems training. O & M background would be very useful and completion of at least one successful project involving IBM equipment.

Excellent opportunities for appointees to utilise creative skills and progression to project leadership.

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Vacancies exist in each team: administration, production control, and accounting. Programming in PL/I and candidates must have about 2½ years' experience ideally on IBM under DOS. A second language and knowledge of job control is desirable as well as a team-minded approach to work. Excellent advancement prospects exist within department.

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The Esso Research Centre invites applications from candidates who have a Mathematics qualification, and experience, preferably in a Technical area, with DEC or IBM 360/370 machines, to join a small team which provide programming and data processing support to the research and technical services of the centre. Programming in Fortran and Basic, the team uses a DEC PDP 11-34 time sharing system, with remote job entry to IBM mainframe. The successful candidate will be responsible for the operation and maintenance of the system, liaising with manufacturers to correct faults. He/She must be able to discuss, with technical staff, their engineering or chemical problems and translate these into computer solutions. This will involve some analysis plus the necessary programming skills to solve these problems. In addition to a good progressive salary there are excellent benefits. The centre is located near Abingdon in pleasant rural surroundings. London is an hour away, Oxford only twenty minutes. If necessary relocation expenses will be paid.

Please apply with full details of qualifications and experience to:



Mr. Dermot P. Sweeney, Employee Relation Services,
Esso Research Centre,
Abingdon, Oxfordshire OX13 6AE. Telephone: Abingdon 21600

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24 — 25 — 26

Programmers

The Independent Broadcasting Authority is a public Authority responsible for Independent Television and Independent Local Radio. The Data Processing Department is situated near Winchester, Hampshire - a rural location approximately one hour from Waterford. Ideally we require Programmers, (male or female) with 1-2 years TDS and TDS COBOL programming experience but some training in TDS and COBOL could be provided to candidates with a sound knowledge of COBOL. The work involves programming for our new Honeywell Level 66 Computer using divide techniques and transaction programming. Applications include Financial Analysis, Stock Control and Broadcasting Statistics. Starting salaries will be within the range £3,352 - £3,917 inclusive of pay supplement according to experience. Re-location expenses will be paid, where appropriate.

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Applications are to be submitted to Director of Planning, Engineering and Transportation, Room 238, City Hall, Wirksworth which should be returned by 26 September 1977.

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The Environment

The Department is organised as a central group function providing a DP service to their UK and overseas divisions. Developments are underway and planned for the future based on distributive processing philosophy. The systems will be on-line with present and proposed systems 3-4 years ahead, planning expansion of database and moving into distributive processing to IBM 3790 and 3630 S.N.A. equipment.

Our clients invite applications from candidates with 2½ years plus experience in data processing and offer above average conditions of employment including: staff bonus scheme, relocation expenses, excellent fringe benefits and recreational facilities including squash courts.

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Freepost, Equity and Law House, 35-37 Great Charles Street, Queensway, Birmingham B3 2BR

MANCHESTER 061-833 0676 FREEPOST

Freepost, Corn Exchange Buildings, Corporation Street, Manchester M4 2BD

LONDON 01-935 0671 FREEPOST 6

Freepost 6, 102, Blandford Street, London W1E 1JZ



SCR

IBM OPERATOR

370/DOS installation requires two years + experience for a two shift system. E.C.2. Company.

£3700 + perks

SENIOR OPERATOR

Eighteen months + experience with GII, three shift system. Hertfordshire installation.

to £3800 pa

CLIENT LIAISON

Must have a stable computer background and be able to deal with people of all levels. Accounts / business experience preferable.

£4000 pa

OPERATOR

This company requires experience with any third generation machine, eighteen months +, twelve hour shifts — W.1.

to £4000 pa

ICL OPERATOR

Two shift system 1900 GII or Manual experience — nine months + W1 installation.

£3000 + pa

OPERATORS

Two years + experience on any machine for E.C.2. installation with two shifts.

to £3500 pa

COMPANIES

LOOKING FOR STAFF?

Telephone Avril Lively who will take the job details from you

01-402 0933

SHIFT LEADER

Two years + experience on IBM 370/125 DOS/VSE installation for E9' company with a three shift system!

£3700 pa

IBM OPERATOR

One year + experience on IBM 370/005/POWER/VSE installation in Essex. Four shift system.

£3400 + pe

STAFF

LOOKING FOR JOBS?

Telephone Avril Lively who will tell you about these and many other jobs available.

01-402 0933

SENIOR OPERATOR

Two years + 1900 GII + experience. Four shift system for EC1 installation.

to £3900 pa

JUNIOR OPERATOR

Six months + experience IBM 005/VSE. Three shift system. Surrey company.

£ Excellent + O/T

SHIFT LEADER

Three years + experience 1900 GII — two shift system. Surrey installation.

to £3800 pa

SENIOR OPERATOR

Two years + experience IBM 370/DOS/POWER: Two shift system. Essex installation.

£3800 pa

AJK RECRUITMENT LIMITED (Emp. Agy.)
26 Chilworth Street, Paddington, London, W2

01-402 0933

ajk

'Should we get a 138?'

A Senior Systems Analyst is required at Wyeth Laboratories to undertake feasibility studies and develop new systems in the Production Control and Financial areas.

He or she must have at least two years' experience in a commercial environment and be capable of leading a small team. We also need a small team to assist in this and to design systems to use TP and a Data Base.

Please apply to:
Mrs. J. Andrews, Personnel Officer,
Wyeth Laboratories,
Huntcomba Lane South, Taplow,
Mr. Meldanhead, Berks.
Telephone: Slough 28311

Wyeth Laboratories

ROYAL NATIONAL INSTITUTE FOR THE BLIND

TWO PROGRAMMERS
for Publications Department

Meeting is now premises near the Angel Underground Station 1978!

We are soon to replace our current system with a dual mini-computer system for online production of braille literature. As a result there will be two posts available with plenty of incentive who ideally will have experience in some of the following areas: FORTRAN, Assembly language, mini-computer programming. Opportunity to get in on ground floor of exciting new project. Salary within scale £3017-£3780 or £3135-£3900 dependent upon qualifications and experience. Free lunch included.

Applications giving age, present salary, qualifications and experience, together with name, address, to Mr. R. Hagger, Works Manager, 224 Great Portland Street, London, W1V 8AA.

We have been retained by one of our clients to recruit the following personnel:

- SENIOR ANALYSTS
- DATAANALYSTS
- SENIOR DESIGNERS
- SPECIALIST/SENIOR PROGRAMMERS
- PROGRAMMERS

All to be based at Croydon, Surrey, RH5 2EP. Quoting Post Ref. No. 412. Closing date: 21st September, 1977.

Stafford Borough Council
TECHNICAL ASSISTANT
(Up to £5,065 p.a. incl.)

Applications are invited for the above newly established post which has the status of Section Head in the Treasurer's Department.

The successful applicant will be principally responsible for the appraisal, design and introduction of computer systems, together with the monitoring and scheduling of data-work flows.

Salary within Grade S01 (£4,239 to £4,646 plus salary supplement).

For further details and application forms apply to Personnel Officer, Borough Secretary's Department, The Hollies, Newport Road, Stafford ST16 1BE (Tel. Stafford 3181, Ext. 218) quoting Post Ref. No. 412. Closing date: 21st September, 1977.

SOFTWARE SCIENCES

Systems & Programming Professionals

London

AnCo - The Industrial Training Authority

Scientific / Software Programmer

Dublin

Applications are invited for the above post in the Data Processing Division, in Baggott Court, Dublin. The successful candidate will be responsible for programming of scientific applications, mainly in the statistical field.

Applicants should have at least two years programming experience using FORTRAN. A degree with a scientific/statistical content would be desirable. The salary scale rises to £6,215 per annum. There is a contributory pension scheme in operation.

Application forms are available from: Personnel Officer, P.O. Box 486, Baggott Court, Upper Baggott Street, Dublin 4.

Telephone 01/688777. Completed forms, quoting reference 173/1, should be returned not later than 27 September 1977.

AnCo
The Industrial Training Authority

Programmer- 1 year's experience London

Have you a minimum of 1 year's experience in COBOL or PL/I? If so, we can offer you an ideal opportunity to join a rapidly expanding computer department at Courage, one of the big six in the Beer and Wine & Spirit business.

We currently use an ICL 1903T, using Meximop and George II+

This month we are taking delivery of a second 1903T to cope with our heavy workload, whilst also considering further hardware requirements.



Courage

Our development plans include the implementation of Database Management Information and On-line order processing systems, as well as several accounting systems.

If you are interested in advancing your career with us, then write giving details of career to date, or telephone for an application form to:

R. D. Moles, Courage Computer Dept., Saccott House, 17 Cumberland Avenue, Park Royal, London NW10. Tel: 01-965 8844.

Systems Programmer

Match the challenge of a new installation

Kent Based

Our client, the Bexley London Borough, is setting up a new installation and now wishes to recruit a Systems Programmer to be completely responsible for all software development.

This new installation will comprise of an IBM 370/138 under DOS/VS with CICS and DL1. The main area of development will be to establish a database for their Central Accounting System, but there is also a wide range of general local government systems to be fully revised.

You must have a sound knowledge of BAL and 3 to 4 years' DOS experience. Ideally you will be familiar with

**Salary up to £5,200 p.a.
Plus car allowance**

CICS and DL1 but full support and training will be available in these specialist areas.

This is an interesting and challenging opportunity to gain valuable experience.

A salary of up to £5,200 p.a. is offered, which will be negotiable according to your experience. The benefits package includes 25 days' holiday plus 7 statutory days, a generous car allowance, and assistance with relocation expenses where appropriate.

For more information, please contact Marilyn Black quoting reference no. 747.

CSA
Computing Services Association

John Goldsmith (Computer Recruitment) Limited
15 Buckingham Palace Road, London SW1
Tel: 01-828 5359, 24-hour answering service

JOHN GOLDSMITH (Computer Recruitment) Ltd.

JBA

Sales Executives

London & Home Counties c. £10,000+ on quota plus car. A well known manufacturer wishes to expand its sales force and therefore has opportunities for professional Sales Executives to join an existing team which is well established with an excellent record over the past few years.

Applicants should have at least two years' experience of selling minicomputers, VRC's or computer services and be able to demonstrate a proven ability in the computer sales field.

Immediate interviews will be arranged for suitable candidates.

Contact: Jim Baker

Senior Fortran Programmer

London to £6000. A vacancy exists within the project team which provides a computing service to a number of engineering groups. A large variety of powerful packages are supported for the use of technical departments. The range consists of Engineering Design and Statistical Analysis and the work includes Implementation, customer support and package development. This is a small team operating in a very significant area providing stimulating and challenging work.

Applicants should have previous relevant experience. Excellent staff benefits and career prospects.

Contact: Margaret Stevens

Computer Operations Controller

London Oil Meditec, which is engaged in the marketing of adhesives and fats and is part of a British owned International group, is changing its computer to an IBM System/32.

An experienced operations controller (male or female) is now required to be responsible to the D.P. Manager for all aspects of operating, data control and data generation techniques to control the testing of PCB assemblies on ATE. An experienced Engineer (male or female) will advise designers on the 'testability' of their designs.

If you have a background in testing, fault-finding, commissioning or a similar field using modern electronic techniques, we will broaden your experience. And remember, a Company like ours is big enough to KEEP YOU INTERESTED.

For further information telephone Mike Bateson on 01-235 7030 Ext. 233 or write to:

Mike Hendel, Electronic Switching Products Division, Standard Telephones and Cables Ltd., Oakleigh Road South, New Southgate, London N11 1HB.

Please apply, giving brief details only, requesting an application form.

LOM

Mr. J. Holden
London, ON M2C 1E9
181 Cambridge St.
London, ON M5A 1L2

neg. to £8000

Excellent opportunities have arisen for experienced systems support persons seeking to work in one of the following areas:- London, Manchester, Birmingham, Bristol or Leeds.

The Company, a leading international group wishes to appoint D.P.

professionals with practical experience of COBOL, communications and operating systems preferably gained on the ICL range of machines.

Applicants should have had around three years' programming and design involvement and be keen to participate in systems analysis, and have considerable customer contact.

The company offer a wide range of excellent fringe benefits.

Contact: Margaret Stevens

up to £8000

COBOL Programmers with VME/B experience are at a premium and our client is willing to offer a generous salary, with relocation expenses where applicable to the right person. Successful candidates will join a young, lively and ambitious team engaged on a wide variety of projects based primarily in the South of England.

Large company benefits and excellent opportunities.

Contact: Jim Baker

For further information on any of the above vacancies please contact the appropriate consultant. If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

JAMES BAKER ASSOCIATES

International Personnel Consultants

16 Maddox Street, London W1. Tel: 01-491 4478

up to £6000

Our client, a well-known international organisation has immediate requirements for Engineers to assist with the development of computer systems.

Successful applicants are likely to have had at least 2 years' in the design and development of peripheral or communication equipment and must be capable of specifying and co-ordinating the production/testing process.

Knowledge of minicomputers or microprocessors would be a distinct advantage as would experience as a systems engineer.

Salaries are negotiable, Large company benefits.

Contact: Mike Crearman

Design Engineers

London & Berkshire up to £6000

Our client, a well-known international organisation has immediate requirements for Engineers to assist with the development of computer systems.

Successful applicants are likely to have had at least 2 years' in the design and development of peripheral or communication equipment and must be capable of specifying and co-ordinating the production/testing process.

Knowledge of minicomputers or microprocessors would be a distinct advantage as would experience as a systems engineer.

Salaries are negotiable, Large company benefits.

Contact: Mike Crearman

MYRIAD APPOINTMENTS LIMITED

Computer Personnel Consultants

ANALYST/PROGRAMMER

WEST OF LONDON

Up to £6000

Our Client is a Systems House operating in Middlesex. They currently require several additional staff, prepared to operate in an Analyst/Programming mode to develop new systems for both their Bureau Users and to enhance their own software products.

The successful applicants will have had several years' experience, preferably on at least one manufacturer's equipment. Extensive COBOL programming, combined with some analysis training, is required, although additional training on the Company's systems and products is envisaged.

The Company, a subsidiary of a major international group, is a comparatively small but rapidly expanding systems house, offering a friendly and pleasant environment in a very attractive area close to both M3 and M4 motorways.

DEVELOPMENT PROGRAMMERS

Any Language

£5000

A successful company is recruiting Programmers to fully participate in its new stage of growth. It has a range of IBM mainframe and PDP minicomputer hardware.

The basic requirement is TWO YEARS' COMMERCIAL EXPERIENCE. Any previous minicomputer experience would be an advantage. Applicants should be willing to learn a new language and receive formal training in advanced programming techniques.

Successful candidates will initially contribute to the development of an on-line system. They should have the potential to become further involved with users' requirements in the future.

An attractive range of fringe benefits including mortgage assistance (after a qualifying period) and loan schemes is offered.

ANALYST/DPM DESIGNATE

NEW INSTALLATION

ESSEX

£5000-£6500

Our client, a manufacturing company based in Harlow are currently transferring their computing activity from a bureau base to a new in-house installation comprising IBM small/medium range hardware.

They wish to appoint a Systems Analyst capable of progressing within a short period to the position of Data Processing Manager.

Suitable candidates will be able to offer proven experience in both analysis and programming. Ideally, but not essential, they will have knowledge of RPG II and will have worked in a manufacturing environment.

The person appointed will play a major role throughout the installation period, after which they will assume responsibility for the two systems. Plans for further compensation include the development of a production control system and an on-line management information system.

ASSEMBLER PROGRAMMERS

S. HERTS / MIDDX.

£4000-£5500

Current requirements and forward plans to keep abreast of advances within the computer industry have created positions within a specialist programming department. The company is interested in meeting people who wish to become more familiar with facets of the operating system in their IBM 370 installation.

Ideally the candidates should be able to offer a minimum of two years' ASSEMBLER and the ability and desire to become Software Programmers.

Full training will be provided and there will be real opportunities for individual career development. These are first-rate openings for those seeking a high degree of job satisfaction in addition to an increase in their future level of remuneration.

Please telephone for a confidential discussion or write to:
30 Fleet Street London EC4Y 1AA
01-353 5868

Promotional Opportunities

The fulfillment of a long term planned expansion programme has resulted in our client wishing to recruit the following additional personnel for its IBM installation in CENTRAL LONDON. Further plans are also at an advanced stage that will augment the present configuration by the introduction of DEC PDP equipment, which will be used extensively for teleprocessing.

Chief Programmer

up to £6000

To take a direct charge of a small team of programmers, the person we are seeking should have a minimum of four years experience of IBM COBOL under DOS or OS. A knowledge of DEC teleprocessing equipment would be an added advantage. The job would particularly appeal to a person looking for the opportunity of a management position while at the same time maintaining a high degree of technical and practical programming involvement.

Programmer Analysts

c£5000

Reporting to the Chief Programmer, the position requires a person who prefers a programming bias to their job content. However, in view of the heavy commitment to new projects, applicants should be prepared for a certain amount of associated analysis work.

Experience of COBOL, under either DOS or OS, are essential technical requirements.

Both positions carry the usual benefits associated with a member of a large public group of companies.

MAYFAIR CW36/1

PDP II RSX IIM up to £6500 London

An international organisation based in London, having one of the most sophisticated real time systems incorporating a worldwide communication network, is seeking additional programmers.

Based on DEC PDP II's and running under RSX IIM using RTL 2, our client wishes to recruit programmers and systems programmers at all levels. Candidates currently seeking a move which will combine technical expertise plus career progression and have worked on PDP II systems should contact the advising consultant as soon as possible.

MAYFAIR CW36/2

Systems Analysts

City of London up to £6250 +mortgage

A large international banking organisation has engaged our services to assist with the recruitment of Systems Analysts for their installation in the City.

Applicants should ideally have experience of banking systems on an IBM 370. However, candidates with a good proven record of success in other application areas, and who now wish to add banking to their career record, should also apply.

Company benefits include a home loan scheme, free lunches, pension scheme and a total holiday entitlement of over five weeks.

MAYFAIR CW36/3

Analyst Programmers for the Energy Field

London Based

Have you qualifications and energy to reap the benefits offered by our client, a major international oil company, in the growing North Sea energy business. Commencing Salary is up to £5500 with a comprehensive list of valuable company benefits, including free lunches and season ticket assistance.

Preferably you will have two to three years commercially based IBM-COBOL experience and a second language, either Assembler, RPG or PL/I. The job offers you the opportunity to use your communicative skills through contact with users. You will probably be under thirty and a graduate with analytical experience.

To discuss the full specification of this exceptional opportunity, contact the advising consultant now.

MAYFAIR CW36/4

Software house seeks owners SPECIALISTS TO C. £6000 - £8000

Our success

- Holland Automation is an International company formed in 1974 and the Group turnover for the first half of 1977 exceeded £350,000 in Holland and the U.K. from pure systems and programming activities.
- the Group's success and its high reputation has been gained from the production of high quality software in the commercial and development software areas of both clients and the major European computer manufacturers and micro-processor companies.

We need

- software specialists to work within application groups on small business interactive systems.
- specialists to work on micro-processor projects for new hardware prototypes.
- responsible personnel capable of working without detailed supervision.

You need

- minimum of four years' proven programming experience in assembler languages, BASIC or PL-I on small business systems, mini-computers or micro-processors.
- to be self-motivated and have worked on computers in a commercial environment.
- to have worked on micro-processors, software development for a manufacturer, or data transmission experience would be an advantage.

Applications, including c.v. in writing to:

Mrs. B. Alken
Holland Automation International (UK) Limited
487a & 488 Bath Road
Clipperton, SLOUGH SL1 6AA, Berks.

Or telephone for Application Form—Burnham (062 88) 85232/3.



Our method

- all employees are shareholders.
- all shareholders are employees.
- only method of operating a successful software house is with enthusiastic highly motivated staff who are given responsibility and a high degree of involvement in the Company.
- provision of a strong bond between employees and the Company.

We offer

- work on variety of projects on latest up to date interactive systems and micro-processors.
- good working environment with enthusiastic motivated personnel aiming to produce good quality software.
- good competitive salary up to £6,500 dependent upon experience plus bonus participation based upon performance.
- full shareholding option and participation in company profits.
- car or ear allowance.
- pension and life assurance and medical benefits.
- four weeks' annual holiday.

We do not

- offer working on large scale projects as part of a big team with little feeling of involvement.
- guarantee an unemotional feeling towards the Company.
- want staff who consider themselves more important than the Company or customer.
- need consultants by name and not by proven deed.
- require staff who cannot work without detailed supervision or commercial knowledge.

Telephone 01-499 9214

Kingston: 44 Wood Street, Kingston upon Thames, Surrey, Telephone 01-549 3212 (24hrs) Telex 27950
Moyfar: 5-6 Yarmouth Place, Brick Street, London W1Y 7DW, Telephone 01-499 9214 Telex 27950
Dublin: Canberra House, 24 Lower Leeson Street, Dublin 2, Telephone 762170 762188 785692, Telex 30742
Amsterdam: Rijverstraat, Amsteldijk 166, Amsterdam 1010, Telephone 461644 Telex 11336



Computing Services Association

William Key & Partners Limited

CONSULTANT PROGRAMMERS MANCHESTER & YORKSHIRE

GEMINI
SALARIES
£3500 - £6000

Gemini Computer Systems Limited, with offices in London and Manchester, is the U.K. operating company of the CAP GEMINI SOGETI Group. The CGS Group employs over two thousand professional consultants in twenty-one countries throughout Europe and the Middle East. The range of services offered by Gemini in the U.K. includes Consultancy, Feasibility Studies, Hardware and Software Evaluation and Selection, Systems Design and Programming.

Gemini continues to expand in the North and wishes to recruit a number of experienced Programmers to work on a variety of interesting projects both in-house and on Client sites.

Current requirements are for Programmers with a sound educational background and any of the following:

- * At least two years' Commercial or Systems Programming experience.
- * IBM COBOL/PL1 experience and/or assembler level language.
- * Working knowledge of on-line or database techniques.

If your experience matches the above requirements and you feel you have the ability to work on your own initiative, Gemini is able to offer the following rewards:

- * Basic salary up to £6000 + profit sharing bonus.
- * Travel and subsistence expenses.
- * Free life assurance and permanent health insurance.

Interviews for the above positions will be held in Manchester or London.
To arrange an early interview, telephone Liz Segal on 061-834 2271 during office hours, or 061-828 5495 after 6.30 p.m. and at the weekend.

William Key & Partners Ltd., 504/508 Corn Exchange Buildings
Corporation Street, Manchester M4 3DD

COMPUTER SYSTEMS ENGINEER MANCHESTER

KRATOS Ltd. manufactures the QS50 and QS300 ranges of data systems which provide real time processing of data generated by scientific instruments.

KRATOS now needs a COMPUTER SYSTEMS ENGINEER to be responsible to the Data Systems Product Manager for the specification, procurement, checking and installation of the system hardware.

Applicants for the post should have:

- * Sound knowledge and practical experience of mini-computers using high level operating systems.
- * Minimum of 2 years' experience of installation and/or commissioning.
- * A degree or equivalent in Computer Sciences.

A competitive salary is offered.

William Key & Partners Ltd. has been retained to fill the above post. Please write with brief details or telephone for an application form: Liz Segal, William Key & Partners Ltd., 504/508 Corn Exchange Buildings, Corporation Street, Manchester M4 3DD. 061-834 2271 during office hours, or 061-828 5495 at other times. Ref: CW 9808.

Computer Operator To £3500 p.a.

We have a vacancy for a male or female operator for our IBM 360/30 computer based in our Head Office at Purfleet. This is a 125K machine with transmission links to our mills in Lancashire and Cumbria. Two Shift working is involved alternately 7.00 am-3.00 pm and 3.00 pm-11.00 pm on five days per week, with occasional paid overtime.

At least one year's experience as an operator of a similar machine is needed, together with a minimum of a Grade 3 pass in 'O' level or a Grade 1 in CSE Maths. A starting salary of between £2,500 and £3,500 will be paid depending upon aptitude, age and experience.

Please apply in writing to the Staff Personnel Officer, Thames Board Mills Ltd., Purfleet, Essex. RM16 1RD. Telephone Purfleet 5355 Ext. 2337.

**THAMES
BOARD**



ON-LINE DATA BASE CROYDON

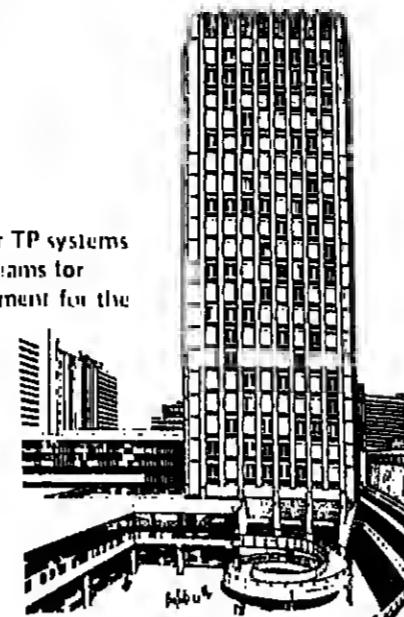
We are an expanding insurance company, developing two major TP systems for an IBM 370/13B using CICS and DL/1. The programming teams for these projects are now being established, and we have a requirement for the following DP personnel:-

SENIOR PROGRAMMERS

With three years' experience of COBOL/ASSEMBLER, and Leadership Potential.

PROGRAMMERS

With two years' experience using COBOL/ASSEMBLER, TP/Datebase experience would be an advantage but, basically, we are seeking staff who are capable of making a positive contribution to a growing organisation. If you are interested, contact our Personnel Manager, Mrs. Jean Knight, at the following address:-



Northern Star Insurance Co Ltd

Rothschild House, The Whitgift Centre, Croydon. Tel: 01-686 5678

REPRESENTATIVE SOFTWARE SALES

Extensive U.K. Travel

c. £10,000 p.a. earnings

SDI are the creators of the successful Systems Software products GRASP, GRASPV, FLEET, EPAT and REACH, which enhance the performance of IBM computers.

We are expanding our activities in the Systems Software market in Britain, where our products have gained recognition since 1968. We are now ready to gain maximum penetration of a highly promising and under-exploited market.

To develop this expansion in North London, South West England, Wales and the West Midlands, we wish to appoint a high calibre Sales representative with proven record of success in the data processing field.

You will be responsible for broadening our client base and exploiting every opportunity that arises within the developing United Kingdom market.

This is a challenging position, not one for a theorist. You will be the type of hardened professional, whose drive, enthusiasm and down-to-earth approach will make a positive contribution to SDI's success. Your results will be visible and well rewarded. Salary will be highly competitive and the sales incentive scheme offers the opportunity for high overall earnings. You will receive a company car.

Please call Simone Lester on 01-204 9433 for more details and an application form or write giving full career details and quoting reference GB/SR to:-

Malcolm White SDI GB
Masons House
Kingsbury Road LONDON NW9 9NG.

SDI

Urgently required in many areas:

CONTRACT COBOL PROGRAMMERS

for IBM, ICL and UNIVAC
COMPLEX COMPUTER SERVICES LTD.
88 High Street
Newport Pagnell
Bucks. MK16 3EJ
Tel: 0808 810410

Oxford Medical Computer Centre

PROGRAMMER Scale 1/4

Salary:
Scale 1 £3,003 + 5% - £3,846 + 5%
or
Scale 4 £3,846 + 5% - £4,656 + 5%

A Programmer is required to complement a team producing real-time hospital systems in Oxford. The job will provide an excellent opportunity to gain experience in real-time programming. Knowledge of one or more of the following would be especially useful: CTI Modular One, DEC PDP-11, Real-time Systems, Database Systems. Hospital Computing. The job is on a fixed term contract until March 31, 1979.

For further details and application form please contact (quoting reference V84/77), The Recruitment Officer, Oxford Regional Health Authority, Old Road, Headington, Oxford OX3 7LF. Tel. Oxford (0865) 64861, Ext. 265. Closing date for applications 27th September, 1977.

**Oxford
Regional**



**Health
Authority**

Mail Order Senior Analyst Wiltshire £5500

Book Club Associates is the fast growing leader of the U.K. book club market and is jointly owned by W.H. Smith & Doubleday. We are highly dependent upon computer based systems and an experienced analyst is required in our expanding Management Services Department.

You will work on developing a variety of important commercial projects based on ICL 2970. You will ideally be of degree standard with some programming experience and at least 2-3 years systems work.

Conditions of employment are excellent as you would expect from a company associated with W.H. Smith—and relocation expenses will be paid.

Write giving brief details of age, qualifications, experience and present salary.

Senior Personnel Officer, W.H. Smith & Doubleday Ltd, Greenbridge Road, Greenbridge Industrial Estate, Swindon SN4 1DQ.

Knight Wegenstein International Management Consultancy, of which Mouncey's are a member Company, have been retained by a Major Corporation in Saudi Arabia to select and recruit the following Important Data Processing Personnel. The Corporation, is the Saudi Arabian Main Agent for the world's third largest vehicle manufacturer, having its headquarters in Jeddah. This progressive organisation has implemented a recruitment policy, which has encouraged the appointment of in excess of 50 experienced European Senior and Line Managers into the Company, who will direct its future development program.

DATA PROCESSING MANAGER

£15,000 p.a. Tax Free

The successful candidate will initially undertake the Feasibility Study, Development and Implementation of the computerisation of their large scale parts department. Ideally candidates should have had several years' experience in D.P. management including experience of a "cold start up" situation, site preparation, conversion from manual systems, and the training and selection of staff. This experience would also be advantageous.

SENIOR ANALYST/PROGRAMMER

£12,000 p.a. Tax Free

The successful candidate will assist the newly appointed Data Processing Manager in the tasks identified above. This appointment will require a person with at least seven years' experience in D.P., three of which should have been in a Systems Analysis and Development environment. A sound knowledge of IBM Hardware is a pre-requisite of this appointment.

CONDITIONS OF EMPLOYMENT

In addition to the salaries identified, both these appointments carry the following additional benefits. Free furnished accommodation, Company Car, Free Paid annual leave in U.K. for the whole family, free Medical expenses, 4 weeks' annual holiday.

Please send your C.V. to Rod Evans (Director of Personnel)



Mouncey & Partners Limited (Recruitment Services Division)
York House, Empire Way, Wembley, Middlesex HA9 0PA
Telephone Number: 01-803 4801

Shift Leader and Operator

Top Rates London

Our client has exciting plans for the future, including the development of a Trans-Atlantic circuit leading to a wide diversification of international computer usage. As the Computer Services Department expands to take on these challenging projects the prospects for promotion will be good.

The equipment consists of an IBM 360/50 with a megabyte of core. The work involves setting up computer runs and print-outs for commercial and technical applications. The people we currently need are:

SHIFT LEADER up to £4,250 p.a.
+ 25% shift allowance.

You will need 3/4 years' DP experience, including OSMVT/HASP and preferably DOS. Age probably mid 20s.

OPERATOR up to £3,500 p.a.

+ 25% shift allowance.

A minimum of 1 year's experience, operating in a similar environment. Age probably 18-22.

Both these opportunities are for men or women with the ambition to succeed and the ability to work under pressure.

Please write in complete confidence, with full details about your age and experience, to:

J. Bya (Ref SLO/CW), Lockyer, Bradshaw & Wilson Ltd., North West House, 119/127 Marylebone Rd, London NW1 5PU.

We currently wish to interview Programmers, Systems Analysts, Analytical Programmers and Consultants for a broad range of clients in England, Australia and South Africa.

Salaries range from £3,000 to £10,000 p.a. If you are interested, why not telephone Ched Stiper at (01) 242-2142 for an informal discussion. Alternatively if you prefer write to him at:

Prescot Computer Limited
6 Gloucester Square
(01) 242 2142 London WC1A 1LP
Telex 23110

Senior Programmers

To maintain the expanding demands on the installation by Group users, Courtaulds I.B.M. Bureau at Spaldon, near Derby, seeks a number of Senior Programmers having approximately two years' experience in ASSEMBLER and/or COBOL and/or PL/I.

The installation is currently being upgraded to 2 x 370/125 with 334D drives and DOS/VSE/GRASP.

Applicants should be prepared to undertake an initial programming assignment of some two years following which there will be opportunities for persons of appropriate ability to transfer into systems work if they so wish.

Progressive salary based on experience; relocation assistance where necessary and other large-company benefits.

Please write to the Administration Officer, HQ. Dept. (HP/102), Courtaulds Ltd., P.O. Box 18, Coventry, or for further information ring Alan Wright at Spaldon on 0332 81422 extension 2237.

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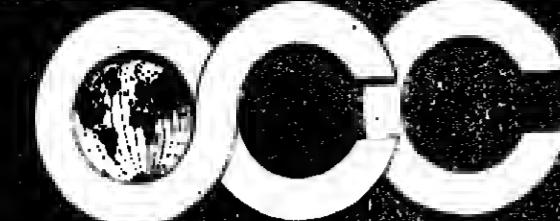
Careful planning often makes the difference between the successful and the not so successful computer career. Prescot Computers understand this because we specialise in overseas computer recruitment and the selection for an overseas post requires extra care by Prescot, employer and employee. We use the same principles of care whether U.K. only or overseas employment is involved.

We currently wish to interview Programmers, Systems Analysts, Analytical Programmers and Consultants for a broad range of clients in England, Australia and South Africa. Salaries range from £3,000 to £10,000 p.a. If you are interested, why not telephone Ched Stiper at (01) 242-2142 for an informal discussion. Alternatively if you prefer write to him at:

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● Paris

Senior Programmer/Analyst

£8,500

Our client is an International firm of Chartered Accountants who require a Senior Programmer/Analyst for their Paris office. He/she will work within the Computer Audit department alongside a small multi-national team of accountants responsible for computer audit work throughout Holland, Belgium and France. The function of this additional team member will be to provide technical expertise and support in the running of computerised accounting systems. He/she must be able to work closely with both professional staff and clients in identifying problem areas within complex computerised accounting systems. Being the only OP professional in the team, he/she must be prepared to carry out varied tasks ranging from writing simple one-off programs designing large interrogation systems, and will also be expected to provide OP training and system control guidance to professional staff.

Candidates for this position must have several years' experience using IBM COBOL under OS/VS and/or OS/VS together with some involvement at a systems analysis level, preferably on accounting systems. Additional experience using other hardware and languages would be useful. Although fluent French is not essential initially, candidates should have a basic knowledge of the language and the ability to reach fluency quickly — they will be actively encouraged to do so. They must also be willing to undertake considerable travel within Europe. Ref: 445/CW/Sharon Matthews.

● Middle East

S. Systems Analysts — Kuwait

£12,000+ tax free
Project Leader — Tehran

\$36,000

Large IBM 370 installations. Long term career positions and contracts. On-line systems — OS, IMS etc.

The KUWAIT client is a major trading company with sales of over \$250m. New IBM hardware is being ordered (370/145 and larger) and an ambitious systems plan is being developed. Top rate Systems Analysts are needed to form the teams. Ideal candidates will be graduates with a sound record of achievements in their careers to date. They should have developed on-line accounting and inventory systems using large IBM computers. These are long term career appointments and there is a preference for married candidates, who would be expected to visit Kuwait before accepting a position. The remuneration package is exceptionally good and includes free accommodation and a car allowance. Ref: 721/CW/Naville John.

The TEHRAN vacancy is with an established consultancy and offers a contract of 1 year (renewable). The Project Leader will be responsible for a small team which will develop a large personnel data base system, to be implemented on large IBM hardware. Candidates should have significant systems experience using large IBM hardware, and experience of IMS and personnel systems would be a distinct advantage. Two Systems Analysts are also required for the project at salaries of about \$30,000. Single candidates are preferred. Ref: 444/CW/Naville John.

To apply for any of the above positions or for further information, please telephone or write to the Consultant concerned on 01-242 9366. If it would be more convenient to telephone in the evening, the telephone numbers are:
Naville John — Farnborough (Kent) (66) 52017. Roger Allington — Barkhamsted (04427) 2299.
Rende Nute — 01-874 6372. Sharon Matthews — Billesley (02774) 22351.

● Scientific Oriented Programming

£3,000-£6,000

The vacancies are based in Reading (Berks) with opportunities to work in the UK or overseas. Candidates must have a degree or equivalent qualification in Engineering or Mathematics as well as several years' systems and programming experience, preferably on ICL Hardware. All applicants must be well spoken and presentable with an awareness of a customer environment. Our clients are Software Houses of international standing, offering first-class conditions and excellent prospects. Ref: 570/CW/Rende Nute.

● Holland

There are currently a number of opportunities in Holland, some of which would apply specifically to Dutch Nationals or Afrikaans speaking personnel where this would be more important than the actual type of computer experience. Opportunities for travel within Europe also exist with some of these appointments. Specific requirements include:

Communications

Fls. 30-45,000+

Most of the projects are Mini based using OEC, Data General, Hewlett Packard or Computer Automation hardware and include total systems supplied on a Turnkey basis with both hardware and software maintenance after implementation. Application areas include Process/Industrial Control, Telex, Message and Packet Switching, F.E.P., Networks and On-Line/R.T. Commercial Systems. Programming experience is essential and for the more senior appointments Supervisory ability or Design and Implementation experience would be required. Ref: 390A/CW/Roger Allington.

Commercial

Fls. 35-50,000+

In addition to the Mini based Commercial requirements, we also wish to recruit a SYSTEMS CONSULTANT with sound experience and knowledge of Inventory/Stock Control applications, preferably using IBM hardware. Specific responsibilities would include Analysis, Specification and Implementation. Ref: 390B/CW/Roger Allington.

Freelance

Fls. 1,100-1,300 per week

Programmers and Analyst Programmers are required for 3 month contracts, primarily for IBM and Honeywell installations in both application and software areas. Data base or Data Communication experience and/or fluency in Dutch or Dutch Nationality would be of particular interest for some of these requirements. Ref: 390C/CW/Roger Allington.



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Association

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c. £4,500

A unique opportunity has arisen within our small research unit of this large international company for a scientific programmer to join the data processing team.

This successful applicant will be involved in statistical analysis, maintenance and enhancement of existing programming systems, use of data-base systems and the writing of general utility programmes.

Applicants for the post should enjoy a variety of work essentially without supervision, and have a good knowledge of at least one scientific

programming language, preferably Fortran. It is unlikely that this knowledge could be gained in less than eighteen months. Exposure to file-management and statistics would be an advantage.

Benefits include Christmas bonus, four weeks holiday, non-contributory life assurance, sickness and pension scheme.

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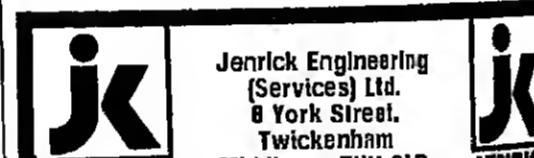
We want Systems Analysts and Programmers with at least 4 years' experience. You must have IBM know-how.

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Seven Senior Systems Analysts	5-8.25K(TW125)
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Five Senior Programme Designers	5-6.5K(TW125)
Three Programme Designers	4.5-5.5K(TW125)
Six Specialist Senior Programmers	4.5-5.5K(TW125)
Four Programmers	3.5-4.2K(TW125)

Each position is clearly defined into its own discipline.

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William Clowes & Sons (Bexley) Ltd. are installing a new Data General Nova 30 computer system with 8Mb disk storage and 16Mb memory. The system is to be used for general input/output and on-line VDU's. The system is to be used for general typesetting applications using a Fortran based suite of software under the RDOS operating system. To drive all disk drives, tape, phototypesetter.

Assistance will be provided with removal expenses, and provision of housing accommodation, in approved cases.

Application forms and job descriptions available from the Personnel Officer, 2nd Floor, Municipal Offices, St. James Street, Ascot, Berks, SL5 1AQ, when they should be returned not later than 22nd September, 1977.

Interviews will be held on 26th September, 1977. Further particulars and application forms from:

The Administrator,
Oxford Polytechnic,
Oxford OX3 0EP.

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Joint Research Centre - Ispra Establishment (Italy)
IS SEEKING for the Informatics Division:

REF. 538:

A SCIENTIST

with university degree or diploma in
INFORMATICS.

He will be charged with the development of a **PACKET-SWITCHING NETWORK** interconnecting heterogeneous computers.

At least 3 years of professional experience in systems development, as well as a thorough knowledge of at least one assembler and one high-level programming language, are essential. Experience in the implementation of **COMPUTER NETWORKS** or **TELEPROCESSING FUNCTIONS** in operating systems would be advantageous.

To carry out these duties, a satisfactory knowledge of English is necessary.

REF. 539:

A SCIENTIST

with university degree or diploma in
ENGINEERING and/or **COMPUTER SCIENCE**.

He will be charged with:

the operation of the **PROGRAM LIBRARY**, the related information service, research activity on **PROGRAMMING** and **DOCUMENTATION TECHNIQUES** for application software; representing the Program Library in European study groups.

A good **SCIENTIFIC BACKGROUND** in general, as well as knowledge of technical-scientific applications of computers and of **SOFTWARE PORTABILITY** and **DOCUMENTATION** problems, are essential. Experience in computerized information services would be advantageous.

To carry out these duties, a thorough knowledge of English is indispensable. A satisfactory knowledge of French and/or German is desirable.

Recruitment criteria, based on the staff regulations and salary scale applicable to temporary agents of the European Communities: Temporary contract, up to five years, with possibility of renewal. Salary according to age, qualifications and experience.

Other benefits include family and expatriation allowances. Only nationals of the Community Member States may be considered for the above posts.

Applications, WHICH MUST CLEARLY SPECIFY THE REFERENCE OF THE POST APPLIED FOR, should be sent to the following address, together with a detailed curriculum vitae and copy of degree or diploma:

JOINT RESEARCH CENTRE, Administration and Personnel Division, I-21020 ISPRA (VA), Italy
WITHIN ONE MONTH OF PUBLICATION

The candidate are requested to apply separately for each post they may intend to compete for.

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And to whatever kind of company you'd like to work for. Manufacturer, consultancy or user.

Herewith, a few examples — just examples. Don't worry if what you won't be here in this advertisement. You'll find a lot more where these came from — upstairs at Real Time Mini's place.

If you have experience on any type of mini computer, DEC, Ferranti, OG Noves, SPC 16, ITT3200, etc., using an assembler-language, end have experience in one or more of the following fields, we'd like to meet you.

Message Switching, Communications, Real Time Process Control, Radar Control, Flight Simulation, Word Processing, Micro Processing, Banking or Commercial.

Those with experience of Coral, RTL2 or OEC operating systems, would also be of particular interest to our many clients.

Phone 01-836 6073 or 01-323 2795. Ask for Beryl McLaren. Interview as soon as you can make it.



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The Company, a subsidiary of a major brewing group, offers a good employment package, including 22 days' holiday and a newly established bonus scheme. Attractive offices are situated conveniently close to both Paddington and Central Line Stations.

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You have attained more than a degree of proficiency in your computer field, perhaps you'd like to diversify a little and teach others what you know about programming, operating or maintenance engineering.

If so, read on, because Control Data Institute — the educational service of Control Data Ltd., world leaders in all aspects of computer products, systems and services — are looking for people aged 24+ with at least 2 years' experience in the computer industry, to become Instructors.

You can earn up to £5,000 p.o. initially, with progression to higher scales.

We're specifically looking for the following:

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COBOL experience essential, plus IBM Assembler/ICL PLAN or other low level language. RPG II would be advantageous. Vacancies exist in London, Southampton and Manchester and you

Phone Susan Robinson on 01-837 2171
for a personal details form, or send your
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Tony Fairfoot
Control Data Institute
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London W1P 3RE



We are just now installing our
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system, and will shortly incorporate
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techniques.

**This anonymous software ad
was written by someone who answered
our earlier anonymous software ad:**

Back in March, Brian Ashworth noticed an ad in Computer Weekly. Its headline said: "The Software Mystery Tour."

Intrigued, he read on.

He didn't learn much, other than that the Company was "highly successful and technically orientated" and that salaries could be in the range £7000-£8000. But the temptation to go along for an interview and find out what the jobs were and who the Company was proved irresistible.

He subsequently joined us.

A little later on, when we asked him what he thought about software work with us, this is what he said:

"I believe our department can offer potential staff a more complete spectrum of work than any other company. Mini computer, micro computer, application packages,

Brian

standard software, compilers, operating systems, techniques and specialisms. The disciplines involved in a large software department, the career development opportunities that are available, the potentiality for line management or remaining 'on the technical side'—all these contribute to a good career. If you add to this the fact that... (our Company name) is in the forefront of its own area of development, then what can any computer professional want?"

If you're a software professional, earning more than £4000, and you're as intrigued as Brian was, there's an easy way to find out more.

Just leave your name, address and phone number with Norman Brown on 01-437 9261 or write to him at Austin Knight Limited, 20, Soho Square, London W1A 1DS.

The Company will soon be in touch with you.

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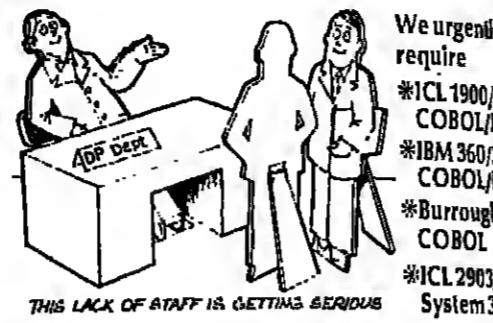
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Our clients are shortly to install new Honeywell hardware at their site in North Liverpool. The equipment will consist of a dual Honeywell 6605 system supporting approximately 44 Level 6 machines in locations throughout Great Britain. They are currently involved in development of sophisticated integrated systems using the latest Honeywell hardware and software including TDS and IDS. Our clients now require additional people to join their application project teams.

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A wide range of programming skills are required for this exciting project including Programmers (with 12 months' plus experience), Senior Programmers and Design/Programmers. Applicants should have experience of one or more of the following:

COBOL (Honeywell preferred)
Assembler (Level 6)
G. Map

The positions are based on the outskirts of Liverpool within easy access to coastal areas and the Lake District (relocation expenses will be paid where applicable). Initial interviews will be held in Manchester, Birmingham and London.

CONTACT: David Wade, 061-833 0676.

Ref. No. 77/09/11

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3½% Mortgage
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A major U.S. International Banking Corporation is seeking a variety of Analysts and Programmers with IBM OS or DOS backgrounds. Programmers should have not less than 2 years' solid COBOL or PL/I with sound JCL and Utilities experience.

Successful candidates are likely to demonstrate ability to develop programs and systems according to a structural design approach. The ability to adapt to professional documentation standards and any experience related to Banking will be considered advantageous.

In addition to a subsidised mortgage and above average starting salary our client offers numerous other worthwhile benefits including non-contributory pension and subsidised Restaurant facilities.

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Ref: 40/1

Salary to £7,500

IMS ANALYSTS & PROGRAMMERS

City & W. London

An important client — leaders in IMS development are expanding several of their project teams in both the City and West London and require experienced Analysts and Programmers with implementation expertise involving IMS under O.S. and preferably knowledge of T.S.O. Preferred languages are COBOL, PL/I or Assembler and any background in Database as experienced programmers.

Exposure to other T.P. Monitors will be considered in lieu of IMS and training will be given where appropriate.

In addition to excellent starting salaries our client offers exceptional fringe benefits and the prospect of rapid advancement is a realistic probability within this very professional O.P.

Interviews will be held throughout September and successful candidates will be made offers of employment within 10 days of interview.

Ref: 40/2



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Ref: 40/3

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Per Diem Allowance

An established U.K. Software House with extensive overseas operations is planning a major expansion programme and requires a number of Systems Analysts at various levels as well as experienced Programmers.

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These positions will appeal to applicants free to travel extensively overseas and to a lesser degree in the U.K. Very generous allowances will be paid during such periods. These positions are permanent and pensionable and candidates seeking long-term career advancement will find considerable scope and opportunity within this progressive company. Interviews will be held in London throughout September and offers will be made to successful candidates within 1 week of interview.

Ref: 40/4



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Systems Consultants**£6,000-£9,500**

CENTRAL LONDON

Seven large well-established consultancies wish to recruit systems people with all-round experience on third generation equipment and the right personality to deal with clients who require a first rate service. Technical communications consultants are also required where in-depth implementation experience of IBM or ICL T/P message switching networks etc., are essential. Excellent fringe benefits and prospects.

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CW 36/4 Michael

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We have many vacancies covering all types of machines and locations. Some firms will retrain from one manufacturer to another. Remember these positions are for shift working only. Hurry whilst stocks last.

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U.K.

We now have ten different firms for both hardware and systems only companies who are anxious to meet successful salesmen in this industry. They must have previous relevant small systems experience (some VRCS will be considered). All firms have bonus schemes and car or car allowance. Most positions in S.E. England, but 2 in Midlands.

CW 36/8 Michael

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01-995 3883 or

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With at least 'A' level education and a minimum of 3 years' PL/1, 300/370 with JCL and IMS programming experience supported by a further qualification or membership of B.C.S.

Technical Systems Programmers

With 300/370 experience and knowledge of the Internals of the OS/VS systems programme and also MVS Internals, generation, de-bugging and maintenance. An engineering or computer science degree would be helpful. Ref: 8281/2/CW

The EDP operation centres on dual 370/158 and 370/168 under MVS and existing applications include materials control, maintenance scheduling, finance, payroll, tax and benefits plans. A large scale IMS/VS personnel data base is also being developed.

Appointments are single-status based on one year renewable agreements. Both sexes have 10 days paid leave at contract end, married men on single-status have 2 weeks' paid UK leave every 4 months with 25 days at contract end. Medical care is free, housing is air-conditioned and recreational facilities are excellent. There are no tax problems. You must hold a current UK driving licence.

Please WRITE quoting the appropriate reference, for preliminary documentation or further details, to Richard Dorval, Astral Recruitment Associates, Astral House, 17-19 Modox Street, London W1R 0EY.

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037 5551 day, 045 0468 even.

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Experienced minicomputer professionals required on our own applications.

Preferably with DEC experience. Contract for at least 4 months £150-£180 weekly. No. Advert. No. 01-998 7342.

037 5551 day, 045 0468 even.

Senior Systems Analyst

London, c. £6,500

This is a new position in the systems team of a major international oil services group. Projects to be tackled in the near future will be centred in accountancy areas, involving close liaison with senior operational staff in both France and the U.K. giving ample opportunity for creative flair.

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London, c. £4,500

The above company requires an operator with a sound knowledge of IBM equipment. The successful candidate will be aged 25-30 years.

M.E. Cayzer, please quote appropriate reference.

LONDON: 01-734 6852, Sutherland House, 5/6 Argyll Street, W1E 6EZ.

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HERTS

AND

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PROGRAMMERS — £3,500/£6,000

ANALYSTS — £4,000/£8,000

Applications are invited from candidates of either sex to be involved in all phases of the development and implementation of the following major applications:

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The system provides assistance in order planning and stock control for major manufacturing sites.

Current work consists of several projects of various stages of development and includes both on-line and batch. The proportion of on-line work will increase over the next few years.

Finance Standard Systems

The system is being developed and implemented to serve the finance function across the Corporation. Database software is used, together with advanced teleprocessing techniques.

Candidates should have a minimum of two years' experience in on-line/programming. Ideally using ICL 1900, COBOL and GEORGE 3.

The Department is located at Rotherham, convenient for Sheffield, Doncaster and Barnsley. The area is close to the Peak National Park, and there is a wide variety of sporting, social and cultural facilities available.

Please forward details or apply for an application form (quoting reference 3) to:

Senior Officer, Management Training and Development, BRITISH STEEL CORPORATION, Sheffield Division, Rotherham Works, P.O. Box 60, Sheffield Road, Rotherham S60 1DW

PROGRAMMER

The company is a small independent team creating quality reference books. We are also leaders in microfilm or book publishing.

We are looking for someone with approximately 2 yrs

experience in Assembler programming and microfilm.

We offer a good salary commensurate with experience, a weeks annual holiday and plenty of opportunity for development.

Apply with full details and stating current salary to:

B. D. Evans, Production Manager,

LAURENCE URDANG ASSOCIATES LTD.

Market House, Market Square

Aylesbury, Bucks.

RW 36/2

COMPUTER PROGRAMMERS

Two opportunities have arisen within our Data Processing Department.

Finally we are seeking a programmer skilled in the use of COBOL to join our team working on a number of interesting projects. We are ICL 1900/2904 Users and have been operating our own on-line real time systems for a number of years.

The work is both interesting and challenging, coupled with the benefits of working for a large company. If this interests you, come and have a chat about salary and conditions.

The team also requires a suitable 'A' level person to train as a programmer.

Please contact, in both instances: The Assistant Staff Manager, Personnel Department, Telephone Leicester 61351 Ext. 110.

RMC

RW 36/3

THE FUTURE:

Ready Mixed Concrete Limited is a large

Company with a world-wide turnover of

£600 million.

We now have a vacancy in our well established

and professional Computer Department as

Operator.

Our installation consists of a main 1900/

10 MT deck, 8 EDS 3000 series hosts

running under Oracle 6.0.2.

In addition, the mainframe is to be replaced

early 1979.

A three week system conversion period

from Monday to Friday.

Applicants should have extensive experience in

operating environments of this type.

Only Operators with a good record of

disciplined operation need apply.

In addition to excellent basic pay,

allowances, we offer an employment

package which includes a contributory

Pension Scheme and Life Assurance.

Please telephone for an interview to

Ann Mullins, Personnel Officer.

10 Dover Street, London W1X 3PH

Telephone 01-499 4501.

Senior Programmers and Programmers

Salaries up to £5,200 p.a.

Bexley's new installation creates interesting and rewarding opportunities

The Bexley London Borough is looking for Senior Programmers and Programmers who would welcome the challenge and development potential of a new installation. Our client is soon to commence an extremely interesting phase of development by installing an IBM 370/138 under DOS/VSE as their first in-house machine. They will be developing a wide range of application areas but primarily, they will be creating a database for their Central Accounting System. They now have vacancies for:

Senior Programmers

With sound experience of IBM COBOL. If you have additional knowledge of CICS, DL1 and have worked in DOS/VSE environment, then this would be of particular interest.

Programmers

Who are competent in writing COBOL programs. If you have not worked in an IBM installation, this is an ideal chance to gain experience of another manufacturer's hardware. Salaries will be negotiable according to your experience and a generous range of benefits include up to 25 days holiday plus 7 statutory days, and relocation assistance where appropriate.

Find out more by contacting Marilyn Black, quoting reference No. 717.



John Goldsmith (Computer Recruitment) Limited
16 Sucklingham Palace Road, London SW1
Tel: 01-828 5368

JOHN GOLDSMITH (Computer Recruitment) Ltd.

MYRIAD APPOINTMENTS LIMITED

Computer Personnel Consultants

SENIOR PROGRAMMING STAFF

MIDDLESEX Large IBM Installation

A major manufacturing and distribution Company to the west of London is seeking senior programming staff to supplement an existing programming team. The Company has recently upgraded their hardware and is currently developing several new systems using the latest IBM software.

A Chief Programmer is required to manage the programming team. A proven track record; capable of scheduling work, meeting deadlines and ability to communicate with senior management is essential.

A Systems Programmer or experienced Assembler Programmer is required to eventually take full responsibility for systems software.

Salary for these positions will present no problems for the successful applicants and the benefits package is commensurate with that expected from a large international Company.

COBOL PROGRAMMERS

New Department

£3800-£5500

Excellent opportunities have arisen for Programmers seeking a position within a new team in a professional environment.

The company, part of an international group, is a leader in its field. Successful applicants will be engaged on extensive development work on an on-line commercial project. Training will be given and those appointed will be encouraged to accept increasing responsibility and gain progression towards design and analysis in the future.

Candidates should be able to offer 1-4 years COBOL experience, as appointments will be made on a level appropriate to individual experience.

The company has a range of fringe benefits including four weeks annual holiday and flexitime.

SENIOR ANALYST/PROGRAMMER

3 years' experience

c £5500

LONDON

This position offers positive career prospects to a programmer or analyst/programmer seeking a greater challenge, more advanced technical experience and additional responsibility.

Having successfully computerised a number of accounting and management information systems, the Company is now developing a larger on-line system to assist with the production and distribution of a wide range of its products. Working within a small specialist team the successful candidate will have the opportunity to broaden his/her experience on this unusual application using the latest techniques and equipment.

Applicants should have around three years' programming experience and be keen to participate in analysis activities involving considerably user contact.

This is a senior position within an expanding organisation where conditions of employment are excellent and accompanied by a range of fringe benefits.

PROGRAMMER

to £5,000

S. E. LONDON

This is an interesting and challenging opportunity for an experienced programmer to join an active department with an enthusiastic approach to computing.

There will be an initial period, during which the person appointed will acquaint themselves with the installation and the company business. After this period they will be encouraged to work on their own initiative often un supervised. They will become involved in all aspects of systems development and will be largely responsible for the smooth running of current live systems.

Candidates will be able to offer programming experience, preferably using COBOL, coupled with some exposure to basic systems analysis.

Please telephone for a confidential discussion or write to:
30 Fleet Street London EC4Y 4AB
01-351 1111



WE SEEK SYSTEMS AND PROGRAMMING PROFESSIONALS FOR EXPANDING AND PROGRESSIVE OPERATION

ANALYSTS, SENIOR ANALYSTS, PROGRAMMERS, SENIOR PROGRAMMERS

BACKGROUND

A record of continuous improvement is the keynote of this Group which has an unparalleled profit record spanning 40 years. Our Engineering and Production reputation is highly respected in the industry, and so, in recent years, is its practical application of computer systems. Existing systems, batch and T.P. based, include Engineering (OSOMP), RPS, Inventory Control, Finance and Parts.

THE COMPUTER

We currently use a 370/145 (1 mb), using 3330 drives. VOs and terminal printers are used throughout the Company. This is to be replaced in January, 1978, by a totally new configuration based on a 370/146 (2 mb).

METHOD OF WORK

You will be a member of one of our key project teams developing and implementing systems for Production, Purchasing and Corporate Finance. All members of our project teams are encouraged to become involved with our user clients not only during requirements analysis but all stages of development.

by writing in sufficient detail as to make an application form unnecessary to.—

PERSONNEL MANAGER
COLES CRANES LTD.
SUNDERLAND SR4 5TT

Or telephone Roy Smith (0783) 58281, extension 326, to discuss details and arrange an early interview.

CAREER PATH

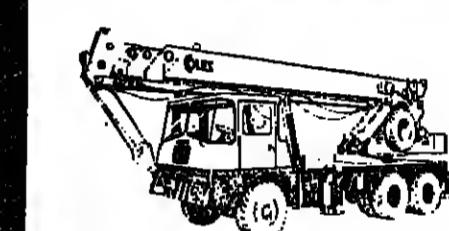
This is a solid career opportunity offering experience, and training where relevant, in a wide range of systems in a dynamic business environment. There are excellent promotion prospects.

CANDIDATES

Applicants should have been involved in the successful implementation of at least one major project, ideally utilising one or more of the following:

DL/1
DSOMP
CICS/VSE
PL/1

In the event that you have not been involved with any of the above yet have SOUND ANALYSIS EXPERIENCE or have programmed in COBOL we are still interested. Salaries are highly competitive, relocation expenses are available where applicable. Working location is in Sunderland, easily accessible from Durham, Newcastle, Chester-le-Street and Washington New Town. The area has some of the best countryside and coastline in England.



MANCHESTER OPERATIONS CO-ORDINATOR SALARY to £4,000

We are retained by our clients, a well established and successful Computer Bureau, to recruit an operations professional. The ideal candidate should already hold a senior position within an operations department and have the ability to survive in a pressurised environment.

Experience in multi-programming and a knowledge of Honeywell equipment would be a distinct advantage but is not essential.

Candidates should have:

- * a minimum of 4 years' experience in operations.
- * proven experience in scheduling and control.
- * the ability to streamline and enhance data control systems.
- * the ability to liaise direct with users.

Our clients offer the successful applicant complete responsibility of the data control and data preparation areas of this expanding Bureau, and many opportunities for improving the existing department's efficiency.

Excellent terms of employment apply including 4 weeks' holiday, fringe benefits and relocation expenses where applicable.

CONTACT: Tony Deane, 061-833 0676, Ref. 77/09/12.

ON-LINE CAREERS IN THE MIDLANDS to £4,800 p.a.

A progressive career awaits you, working for a multi-million pound turnover group based in the Midlands.

Our client has an impressive data processing commitment involving extensive usage of on-line application development, based on ICL equipment.

Opportunities now exist for e

SYSTEMS ANALYST/ PROGRAMMER

Candidates should have:

- * Systems design or implementation experience coupled with a programming background.
- * Experience of commercial applications, ideally in an ICL environment.
- * Above all a true desire to progress and respond to the challenge of working in a professional and well managed environment.

Relocation expenses, excellent working conditions, low cost housing and other large company benefits including discount on company products, are offered to the successful candidate.

CONTACT: Cathy Tracey on 021-236 3781, Ref. 77/09/13.

SPECIALIST COMPUTER RECRUITMENT LTD.

BIRMINGHAM 021-236 3781 FREEPOST

Freepost, Equity and Law House, 35-37 Great Charles Street, Queen'sway, Birmingham B5 2BH

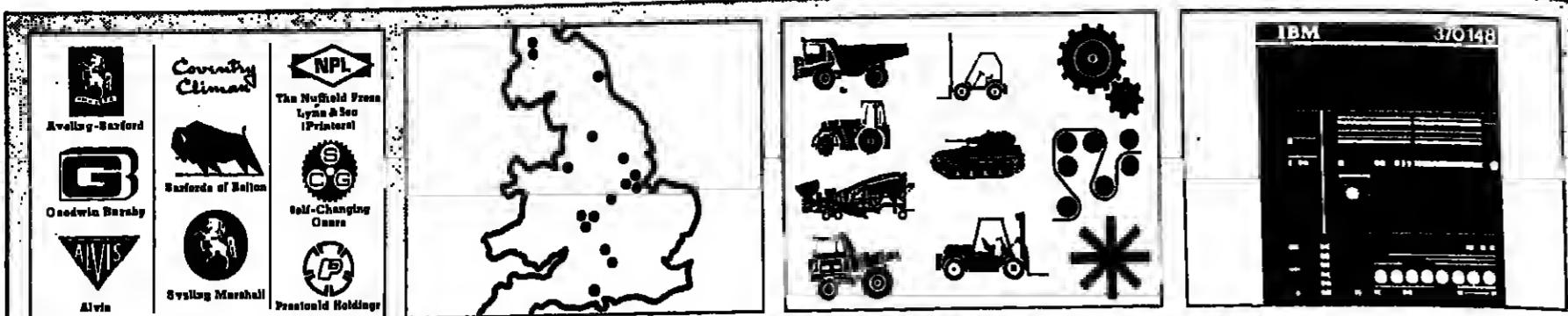
MANCHESTER 061-833 0676 FREEPOST

Freepost, Corn Exchange Buildings, Corporation Street, Manchester M1 9BD

LONDON 01-935 0671 FREEPOST

Freepost, 102 Blandford Street, London W1E 1JZ





TEN COMPANIES

SIXTEEN LOCATIONS

DOZENS OF PRODUCTS

AN IBM 148

And you to develop Group Systems

Having almost doubled in size over the past three years, we're now the eighth largest specialist engineering group in the U.K. Our products are as varied as they are commercially successful - from refrigeration equipment and cement mixers to construction equipment.

Sales up 33%
Predicted financial results for 1978 justify our self-pride... sales are expected to increase to £203m, profits 43% to £1.8m and employment by 8% to about 13,200. Capital spending is already up with

the computer function as a priority area... new personnel, a new IBM 148 arriving in November and new systems to meet rapidly changing Group needs. That's where you come in.

Group System Development Planning Manager
To help develop and implement a computing facilities plan which allows for both Group and Plant policies, objectives, priorities and systems plans.
Aged around 30 years, ideally a graduate, you must have a broad technical background in computing plus at least 7 years' experience in data processing.

The professional challenge! Of course you've read it before but, this really is a unique opportunity to help establish a blue-print for future systems planning. And to attract the right men or women, we really are offering competitive salaries with a substantial benefit package and an excellent career plan.

A better standard of living
If you're interested in joining us here at Grantham... in an area which boasts attractive country-side, excellent facilities and cheap housing.

Tel: Molton Mowbray (0664) 4166

Leyland Special Products

SAUDIA, flag carrier of the Kingdom of Saudi Arabia is seeking as part of a planned programme of expansion men aged between 25-45 to fill the following vacancies in its Data Services Department.

**SENIOR SYSTEMS ANALYST
Starting Salary c.£10,000 Tax Free**

The successful candidate will be required to analyse and present systems for improvement of the product. He will organise and direct project responsibility for Systems Analysis, co-ordinate the implementation of systems, prepare system flowcharts and design logical requirements and systems control for programming. Applicants should hold a college degree in equivalent and have at least 6 years' data processing experience, two of which should have included systems analysis/design. A knowledge of COBOL, IMS and basic IBM 360/370 OS/VS-1 operating systems would be preferred.

Ref. SSA/CW

**SYSTEMS ANALYST
Starting Salary c.£10,000 Tax Free**

Duties will include the design of system improvements and programme control; the analysis of documents, files and reports related to workflow and the development of cost statistics and preparation of system flow chart. Applicants should be educated to 'A' level standard with a diploma in Computer Studies preferred. At least 4 years' experience in data processing is essential and a knowledge of COBOL, IMS and basic IBM 360/370 OS/VS-1 operating systems would be an advantage.

Ref. SA/CW

**SENIOR PROGRAMMER
Starting Salary c.£10,000 Tax Free**

There will be a requirement to develop programming costs and prepare project schedules; to design logic for individual programmes and programme systems, to code programme instructions and prepare test data. Applicants should have at least 4 years' programming experience and they should be educated to G.C.E. 'A' level standard. A diploma in Computer Studies would be preferred and a knowledge of COBOL, IMS and basic IBM 360/370 OS/VS-1 would be an advantage.

Ref. SP/CW

**PROGRAMMER
Starting Salary c.£9,300 Tax Free**

The duties of the programmer will comprise the analysis of programme performance, the design of conversion procedures, programme logic and the organisation of data control procedures.

Applicants should be educated to G.C.E. 'A' level standard and have at least two years' experience as a programmer. Programming language is COBOL but PL/I and BAL would be desirable.

Ref. P/CW

These posts based in Jeddah are offered on a two-year renewable contract together with unfurnished accommodation, free and reduced rate air tickets for you and your family, 40 calendar days vacation per annum plus relocation allowance.

Please write with full personal and career details quoting the job title and appropriate reference number to:

Area Personnel Manager - Europe,
Saudi Arabian Airlines,
93 Regent Street,
London, W1.

Closing date, 22nd September, 1977.

Saudia
SAUDI ARABIAN AIRLINES

Headquarters: London, 10 Greys Place, London SW1P 1RD
Telephone: 01-580 1115 Headoffice: London, EC3A 7BB Telephone: 01-580 1115

Computing Services Operator

Educated to 'A' level standard. Knowledge of Univac or IBM JCL, experience in data control and terminal or main frame operating would be an advantage.

Our sophisticated computing terminals require a three shift cyc operation.

Annual remuneration, inclusive of allowances and Incomes Policy supplements would be in the region of £4,000.

- First class working conditions
- Free meals
- Four weeks annual leave
- Sports and social facilities

Telephone or write for an application form to:
Shell International Petroleum Company Limited,
Shell Centre, London SE1 7NA. 01-834 2828

**Senior Analyst • Senior Programmer
• Systems Analysts • Programmer**

Looking for wider experience and career progression?
Great opportunities to develop your career within an expanding environment.

Our Client is a large and rapidly diversified Public Company with an annual turnover in excess of £500 million.

The Data Processing Department is playing an increasingly important role in the provision of management information and is gearing itself for ever greater range of development commitments.

All new systems are being developed using TOTAL DATABASE software (for which suitable training will be given).

The following staff are now required to strengthen the present establishment.

- Senior Analyst c.£8,000 + car and other benefits
- Senior Programmer c.£8,000 + car and other benefits
- Systems Analyst c.£8,000 + other benefits

To assist in the development of a wide range of applications. Applicants must have at least 3 years COBOL experience and be able to demonstrate a professional approach to project management and to communicate effectively with senior level user management.

- Programmer c.£4,700 + other benefits
- Assistant to the Computer Service

To assist in the development of a wide range of applications. Applicants must have at least 3 years experience and have the potential for significant career development.

Benefits for all appointments include a Good FREE fringe package, Subsidised BUPA membership, Contributory Pension Scheme, etc.

Please write in the first instance, enclosing details of your experience. Enclose below. (Reference 681) must be quoted on your envelope along with a separate note of any companies to which your application should be sent.

Everett Recruitment, 10 Greys Place, London SW1P 1RD

Telephone: 01-580 5644

EVERETT

NEW APPOINTMENTS**EAST MIDLANDS
SALES EXECUTIVES****TERRITORY MANAGERS****£10K +**

If you have proven sales success of COMMERCIAL DISC BASED computer and COMMUNICATION systems and are seeking CAREER ADVANCEMENT with ABOVE AVERAGE rewards this is the opportunity for you.

A generous basic salary together with car allowance and a highly rewarding remuneration plan can make you one of the highest paid members of the industry. Full support and demonstration facilities plus a national and international installed base mean the only limitation to your SUCCESS and REWARDS will be your own ability.

Ring the advising consultant now quoting Reference CW 149.



Insight Marketing & Personnel
Consultants Ltd.
72-75 Marylebone High Street
London W1M 4AJ
Telephone: 01-486 5644

**SUPPORT SPECIALISTS - IRELAND
DUBLIN — £6.5K +**

A major multinational computer manufacturer currently involved in an aggressive marketing program and an extensive installation schedule of mainframe computers, has urgent need for mature and talented support specialists, to join their highly motivated support group based in Dublin.

Successful applicants will have a strong programming/analysis background ideally with experience of programming in Cobol and RPG (System 3). Involvement in conversion projects and on-line systems would be an advantage.

Initial projects will involve working with and guiding user companies in the installation and implementation of new computer systems.

Career progression is assured for the well-motivated and imaginative support specialist through high grade training and opportunities for promotion based on performance and the ability to contribute to the growth of the company's business.

A high basic salary and first class fringe benefits will assure that you are one of the highest paid members of the industry relative to your contribution and experience.

Write or telephone now to Pat Reiter, Managing Director, quoting reference CW 002.



IMPC (Ireland) Limited
33 Mepple Road
Dublin 4
Ireland

PROJECT MANAGERS

POST SALES SOFTWARE SUPPORT STAFF
FLEXIBILITY WITH RESPONSIBILITY
EARNINGS POTENTIAL TO £6,500 PLUS EXCELLENT FRINGE BENEFITS & CAR
WEST LONDON

Does your present position fail to fulfil your ambition and potential?
Are you capable of accepting greater responsibility?

Would you welcome the opportunity of working on varied projects and languages — if so read on.

Our Client, a multi-national company with the highest reputation in software and systems has, due to expansion, opportunities for a select band of analyst/programmers with the flair to accept, on a project basis, client responsibilities.

The ideal candidate will have extensive knowledge and first-hand experience of programming in high and low level languages including if possible Assembler, Fortran, Cobol and Pascal.

The successful candidate will have the opportunity of commercial involvement on both sales and business negotiations together with the technical development of projects, and travel in the UK is a possibility.

Early career progression will arise to offer the successful candidate a lucrative, challenging career.

For an informal discussion regarding this exciting career opportunity contact the Senior Consultant, quoting reference number: CW150.

Insight Marketing & Personnel
Consultants Ltd.
72-75 Marylebone High Street
London W1M 4AJ
Telephone: 01-486 5644

**OXFORD
NEW OPPORTUNITIES****ANALYST/PROGRAMMERS
c.£5,000**

Our client a British subsidiary of a large American company are embarking on a major expansion program and have opportunities for computer professionals to join the existing organization in the planning and implementation of the company's computer requirements.

Situated in Oxford, their ever-expanding growth will require their own 'in house' computer and immediate vacancies exist for Analyst programmers and a Systems Operations Supervisor.

Analyst/Programmers educated to G.C.E. 'A' level standard and fluent in Cobol or PL/I. Ideally will have worked in a manufacturing, planning, stock and material control system with at least 3 years experience in a computing environment. Salary Circa £5,000.

The Systems Operations Supervisor will have gained management experience of leading a team developing and implementing material control and material handling systems. The ideal candidate should have at least six years experience of working with computers. Salary negotiable Circa £6,000.



Insight Marketing & Personnel
Consultants Ltd.
72-75 Marylebone High Street
London W1M 4AJ
Telephone: 01-486 5644

Ring the advising consultant immediately quoting Reference CW151.

**SYSTEMS OPERATION SUPERVISOR
c.£6,000**

Our client a British subsidiary of a large American company are embarking on a major expansion program and have opportunities for computer professionals to join the existing organization in the planning and implementation of the company's computer requirements.

Situated in Oxford, their ever-expanding growth will require their own 'in house' computer and immediate vacancies exist for Analyst programmers and a Systems Operations Supervisor.

Analyst/Programmers educated to G.C.E. 'A' level standard and fluent in Cobol or PL/I. Ideally will have worked in a manufacturing, planning, stock and material control system with at least 3 years experience in a computing environment. Salary Circa £5,000.

The Systems Operations Supervisor will have gained management experience of leading a team developing and implementing material control and material handling systems. The ideal candidate should have at least six years experience of working with computers. Salary negotiable Circa £6,000.

Insight Marketing & Personnel
Consultants Ltd.
72-75 Marylebone High Street
London W1M 4AJ
Telephone: 01-486 5644

MIDLANDS/WEST COUNTRY

Where the prospects are brighter



COVENTRY

Our client, a major group in the Engineering Industry, are seeking the following staff to augment their existing team:

2 SENIOR SYSTEMS ANALYSTS. c£5,000 per annum. At least four years' plus financial or Manufacturing systems. Good knowledge of On-Line systems. Experience on IBM or UNIVAC Hardware.

SYSTEMS ANALYST. To £4.5K. At least 2 yrs. experience. Would consider programmer who has spent a good proportion of time on Systems Design or Analysis work.

ON-LINE TERMINAL PROGRAMMER. c£4,500. 2 yrs. plus Assembler. Good knowledge of On-Line applications.

PROGRAMMER. c£4,000. At least 2 yrs. + Cobol or Cobol and Assembler. Although this company is situated in Coventry, it is easily accessible to the motorway with low cost housing nearby. Full relocation expenses paid to successful applicant.

MANAGEMENT/SYSTEMS

SYSTEMS AND PROGRAMMING MANAGER. 7 yrs. + experience in ICL 1900 Hardware, including On-Line and Real Time systems. Area: East Midlands. Salary c£8k.

CONSULTANT ANALYST/PROGRAMMERS. Required by a leading Software house. 5 yrs. + in Programming and Systems. Area: Midlands. Salary c£6.5K.

CONSULTANT PROGRAMMER/ANALYST. For Time Sharing Bureau. Applicant should have a degree plus a working knowledge of APL. Car supplied. Area: Midlands or London. Salary £3 1/2 - £5 1/2k.

COMPUTER MANAGER. Conversant with ICL 2903 or IBM Systems 3.5 yrs. + Systems and Programming Language RPG 2. Area: West Midlands. Salary c£5.5K.

CUSTOMER SUPPORT ADVISER. 5 yrs. + experience in Production / Engineering Systems. Area: Staffs. Salary c£4 1/2K.

SENIOR SYSTEMS ANALYST. 4 yrs. + experience. Cobol background. Area: Wiltshire. Salary c£5K.

SYSTEMS ANALYST. 2 yrs. + experience with Cobol background. Area: Leicestershire. Salary to £4.8K.

IMPORTANT REMINDER

Make sure you don't miss our issue of September 22nd, which will highlight the opportunities currently available in Wales and the West Country. To advertise in this important feature contact:

Alan Escott on 021-356 4836

or

Mark Williams on 01-261 8019

CREDIT LYONNAIS

a leading French Bank, long established in London, has recently installed a 256K IBM 370/125/2 which is currently being used on batch systems and to which the Bank's 16 existing terminals will shortly be connected for on-line applications.

Two additional staff are required to work on a 2-shift, 5-day week system. Salaries are inclusive of shift allowances and there are attractive fringe benefits, including LV's and an annual bonus.

2 COMPUTER OPERATORS

with at least 1 year's experience including 370 operation under DOS and, preferably, VS. A starting salary of around £3250 per annum is envisaged.

Applicants should have a mature and responsible attitude to their jobs and be able to work well in a small team.

Please apply in writing to:

Mr. H. Young, Personnel Manager
Crédit Lyonnais, P.O. Box 81
84-94 Queen Victoria Street, London EC4P 4LX

CONTRACT EUROPE

High income contracts through R.T.Z. Computer Services/Liaison, the Paris based European systems house.

Graduates and experienced personnel required with knowledge of scientific or financial systems. Interface and database technology.

Languages: COBOL, PL/I, FORTRAN, BASIC or Assembler level.

Minor or mainframe experience required.

Contracts for Operators, Programmers and Analysts in France, Germany, Holland, Italy, Spain, Switzerland, and United Kingdom.

R.T.Z. Computer Services Limited:
18/19 Sandringham Street, London WC1R 4PZ

01-405 9964



SCHOOL EXAMINATIONS DEPARTMENT — UNIVERSITY OF LONDON

PROGRAMMER — up to £5,261 inclusive

Applications are invited from programmers with at least 18 months' experience in PL/I and preferably with a working knowledge of COBOL to join a team of programmers responsible for the processing of the University GCE Examinations in the United Kingdom and overseas. An ICL 1801 computer is used and programs are stored on disc and magnetic tape files. Applications should be sent to OEROC, Computer Operations Department, University Park, Nottingham NG7 2RD. Applications should be received by 23 September 1977.

Application form, which should be returned by Friday, 23 September, and available with further particulars from Mr. Alan Young, Personnel Officer, University of London, Examinations Department, 68-72 Queen Square, London WC1R 4PT. Tel: 01-380 0000 Ext. 2000.

CONTRACT U

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Languages: COBOL, PL/I, FORTRAN, BASIC or Assembler level.

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R.T.Z. Computer Services Limited:
18/19 Sandringham Street, London WC1R 4PZ

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BOOKS

Computer science for programmers

Useful guide for the business student

The Theory of Computer Science (A Programming Approach) by J. M. Brady. 287 pp. £2.00 (£1.50 paperback). Chapman and Hall.

THIS book aims at introducing the main features of theoretical computer science without too much mathematical detail. It is divided into two parts.

Part One deals with the meta-theory, by which is meant results about computer science. Two models for computable functions are taken: Kleene's recursive functions (GRFs) defined via schemes and Turing computable functions defined via Turing machines. These classes are shown to be co-extensive by compiling GRFs into Turing programs (thinking of this as the machine language) and conversely simulating Turing machines using GRFs.

Part Two is concerned with theoretical results in computer science. It begins with an account of McCarthy's work, where computable functions are defined using composition, conditionals and recursion. (If Kleene's First Recursion Theorem had been given in the meta-theory, it would then be immediate that nothing is being added to GRF by including recursion.) A discussion of recursion induction is given with several examples, but it is not made clear that only total functions are being considered.

Reliability of programs is next considered. This is a good brief account of program proving, based mainly on Floyd, Hoare and Mano's work. The final chapter is on the meaning of formal languages contains

some errors. Throughout Part One, the author tries to give as much motivation as possible (in contrast with many more mathematical treatments).

The style is easy to read, but the persistent use of "checkpoint" I found somewhat irritating. The choice of BCPL for writing many of the programs seemed a bit odd, especially as it was then necessary to add an appendix on the language.

The results in this book should be known by the average programmer. (Witness the remark of the author when discussing the halting problem, "I am aware of a computer manufacturer who, in the past decade, attempted to build such a program")! The fact that there is not too much mathematics (together with the reasonably paperback price of £1.50) might make it attractive to them.

PHIL GRANT

This new edition of the textbook is intended to update it with the developments which have occurred since the first edition was published in 1973. The new sections designed to cover these developments comprise a discussion of hardware trends and the use of BASIC.

The book is apparently intended for use at a graduate business school as the course textbook on an introduction to data processing. It would be more successful in this if it concentrated more on the new techniques which management needs for the future and less on what has been achieved in the past.

The crisp, factual style of writing condenses a large amount of information into the volume with relatively little discussion.

The book does seem to have suffered some degree of time-lag in preparation. The copious references, for example, are limited to the period 1949-1974. Much has happened to security techniques in the past few years — access cards, for instance, have become highly sophisticated. Privacy has become a burning topic — it is hardly mentioned in the book. Personnel and Insurance fare little better, both limited to brief paragraphs. This hardly does justice to their relative importance in DP security terms.

This publication ignores the evaluation exercise, concentrating more on physical safeguarding of computer systems. Particularly thorough is the emphasis on security software systems and terminals. Program and operating protection methods are

fully described. The book includes useful surveys of implemented protection systems.

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